

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

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Founder and Editor : STANLEY SPOONER

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"FLIGHT" PHOTOGRAPHS.

To those desirous of obtaining copies of "Flight" Photographs, these can be supplied, enlarged or otherwise, upon application to Photo. Department, 36, Great Queen Street, W.C.2

DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list :—

1927

- April — International Aero Exhibition, Copenhagen.
- April 8 Inst.Ae.E. House Dinner
- Apr. 15-18 Bournemouth Easter Races.
- April 19 "Flying for Air Survey Photography." Capt. F. Tymm, M.C., before Inst. Ae.E.
- April 19 Aero Golfing Soc. Match, Moor Park.
- April 25 Annual Dinner, 29th Division Association, Cafe Royal, London.
- April 27 Inst.Ae.E. Visit to Works of De Havilland Aircraft Co., Ltd., Stag Lane Aerodrome, Edgware.

INDEX FOR VOL. XVIII.

The Index for Vol. xviii of "Flight" (January to December, 1926) is now ready, and can be obtained from the Publishers, 36, Great Queen Street, Kingsway, W.C.2. Price 1s. per copy (1s. 1d. post free).

EDITORIAL COMMENT.



THE paper read before the Royal Aeronautical Society by Major Wronsky, Political Director of the Deutsche Luft-Hansa, a short time ago, and to which reference was made in FLIGHT last week, brought out very clearly not only the degree to which the German Reich is assisting German civil aviation, but the manner, if not the extent, to which German states, cities and last, but not least, German banks, are doing their best to help smooth the path for what is so evidently considered in Germany an essential corner stone in the fabric of modern communications. At the same time, everything is being done to foster in the German people the spirit which has been so aptly called by Sir Samuel Hoare "air-mindedness." No one who has visited Germany on aviatric occasions can have failed to be impressed by the interest of the German "man in the street" in everything pertaining to flying. He will turn up at an aviation meeting at 4 a.m., even if this means (as it frequently does) walking the last few miles. He will stand about patiently in enclosures more or less all day, with precious little going on, provided there is a refreshment tent at the back of the enclosure. He will in consequence of all this willingly pay towards the Government assistance to civil aviation, provided he can see the new German air net spreading its meshes to ever-widening posts.

More recently—since Germany's admission to the F.A.I. in fact—yet another form of propaganda has been inaugurated, or perhaps one should rather say revived: that of establishing world's records. Although it is only a few months since German flying

records became entitled to homologation and recognition by the *Fédération Aéronautique Internationale*, several attempts have already been submitted for homologation, all of which appear likely to be accepted as new records. All this is an indication of the earnest way in which Germany treats aviation. Such purposeful determination cannot fail in the long run to place Germany in a leading position in aviation matters, and although one should realise that the peculiar conditions under which Germany has existed, and to some extent still exists, have been the means of preparing the soil for German air expansion (for instance, Germany is prevented from, and is thus spared the expense of, keeping an air force, and can therefore spend more on civil aviation), one should not accept this as a case of "*Gott mit uns*" and sit down quietly and submit to Germany outdistancing all other European countries.

Let it, once more, be clearly understood that we in no way blame Germany for her determination to lead the world in civil aviation. On the contrary, we admire her for it, and would think less of her were it not so. Rather should we hold up Germany as an example of what a concerted effort can do. The establishment of world's records is merely one phase of propaganda, but it is in our opinion a very important one. In this country we have too long been content to sit down and "let the world's records go by," so to speak. The time has come for taking action. The Air Ministry never tires of expressing the desire for spreading "air-mindedness." World's records are a means of impressing people, our own no less than others, and thus a very good case can be made out for direct Government assistance in the direction of records. Since the whole country benefits by them it is up to the whole country to support record attempts, and the attitude of the Air Ministry that records must be looked after by individual manufacturers is illogical. A beginning was made, it is true, when the Ministry decided to support a "high-speed programme." Another concession was the decision to let a Hawker "Horsley" attempt to beat the world's non-stop long-distance record, an attempt which will, it is hoped, be made in about a month's time. But this is not enough. There ought to be, as in France, a clearly defined policy by which the manufacturer of any British aircraft that succeeded in establishing a world's record should be given a substantial money premium. Moreover, no obstacles should be placed

in the way of manufacturers attempting records with service types of machines, even in the case of types that are still on the "part-publication" or even on the "secret" list. The establishment of a record merely entails the accurate measurement of speed, altitude, distance, time, or load carried, and would not give away any information which, in itself, would be of much use to anyone. The mere knowledge that a machine has a speed of, for example 285 m.p.h., does not impart any information as to how that speed was attained. And so in all classes of records. One sees the result of good design and/or construction, but one does not disclose thereby the details which made the performance possible.

Incidentally, while on the subject of German records, is not the distance and duration record with 2,000 kg. of useful load established by a Junkers G. 24 the first world's record to be claimed by a three-engined machine? We believe it to be, and cannot trace any other record put up by a machine of this type. There have been single-engined records in plenty, a few twin-engined records, and one or two four-engined, but no record appears to stand to the credit of a three-engined type. If so, the Junkers company can claim the credit for having started a new fashion, so to speak, in world's records.

Another Milestone

A little ceremony took place at the Stag Lane aerodrome last week which, although apparently of small importance, may come to be looked back upon, in years to come, as marking yet another milestone in the history of aviation. The occasion was the "christening" of a de Havilland "Moth" purchased by the "Shell" company for the use of their representatives. So far as we are aware, this is the first time a commercial firm of the standing and magnitude of the great petrol firm has adopted the aeroplane for serious business, as distinct from an advertising "stunt." The "Moth" will be used regularly by Mr. Shaw, manager of the aviation department of "Shell-Mex," who will use it for his travels to various centres where his business takes him. Doubtless, the golden "Moth" will very soon become a familiar sight at all our aerodromes, and it is to be hoped that the "Shell" company may prove but the first of many such firms to make serious use of aircraft for business purposes. Here's success to "Arom"!

Sir Samuel Hoare and the Press Club

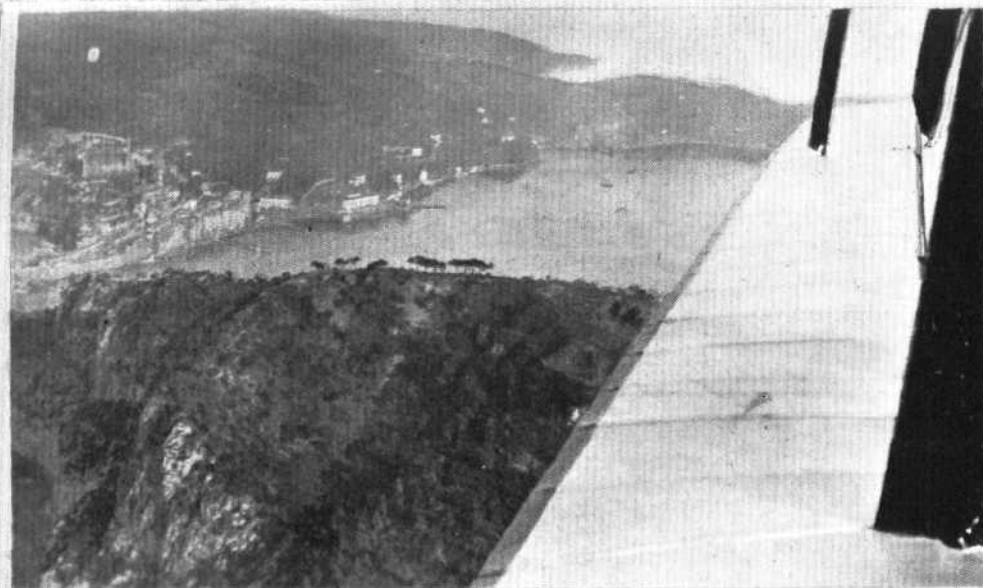
SIR SAMUEL HOARE, the Air Minister, was the chief guest at an "Air Night" dinner at the London Press Club, at which Lord Riddell presided, on March 26. He said that he was trying first to strengthen the Air Force that it might undertake adequately the work of home defence, and the work with the Army and Navy and overseas. In times of peace, particularly soon after the war, every item of expenditure was rightly criticised. When there was a prejudice against any kind of military increase it was not an easy thing to treble the strength of one of the three fighting services, which was the duty on which he was engaged. There was also the development of Empire air routes, which involved much preparation and expenditure, and no one should feel impatient if it took a long time to accomplish. Referring to airships, he said that it must not be assumed that what was true of airships in the war was going to be true now. Their benefit to the Empire was the reason they were being developed.

Sir Alan Cobham said that we must create an aviation mentality which could only be done by continuous propaganda, and when that came about, Empire air routes would rapidly progress.

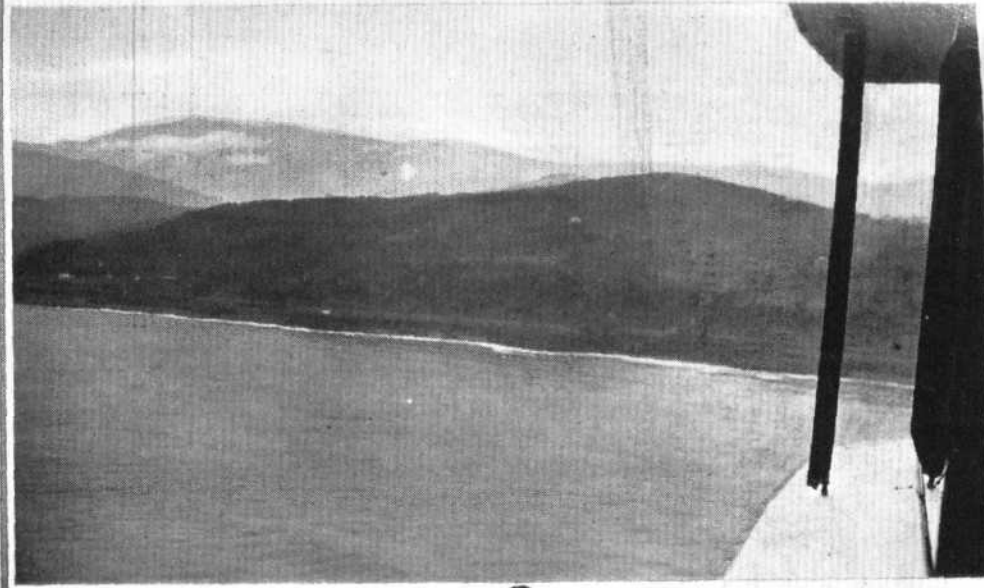
Other speakers included Major Herbert Scott, Royal Airship Works, Cardington, and Major G. Woods Humphrey, Managing Director of Imperial Airways. Among those present were:—M. Marcel Grosfils, President of the Air Union of France; Herr Bieger and Herr Warmeling (Wiesbaden); Signor Pietro Castro (Vigo); Major W. E. de B. Whittaker; Sir Stanley Bois; Mr. S. W. St. Cedd; Mr. F. H. Jones; and Mr. Percy Rudd (Chairman of the Club).

New Wireless Equipment for Croydon

THE Marconi Wireless Company are to erect a new wireless station at Croydon for the Air Ministry, and it will consist of a group of four 3-kilowatt transmitters operated in conjunction with a wireless direction-finding receiver. The transmitters will be capable of telephonic and continuous wave and interrupted continuous wave telegraphic transmission, the wave range being from 800 to 2,000 metres. Independent drive circuits will be incorporated to maintain constancy of frequency and wave-length. Energy for the transmitters is to be supplied by a common motor alternator group, the power from which may be switched on to any of the transmitters. The new arrangement is expected to take the place of the old before the end of the season.



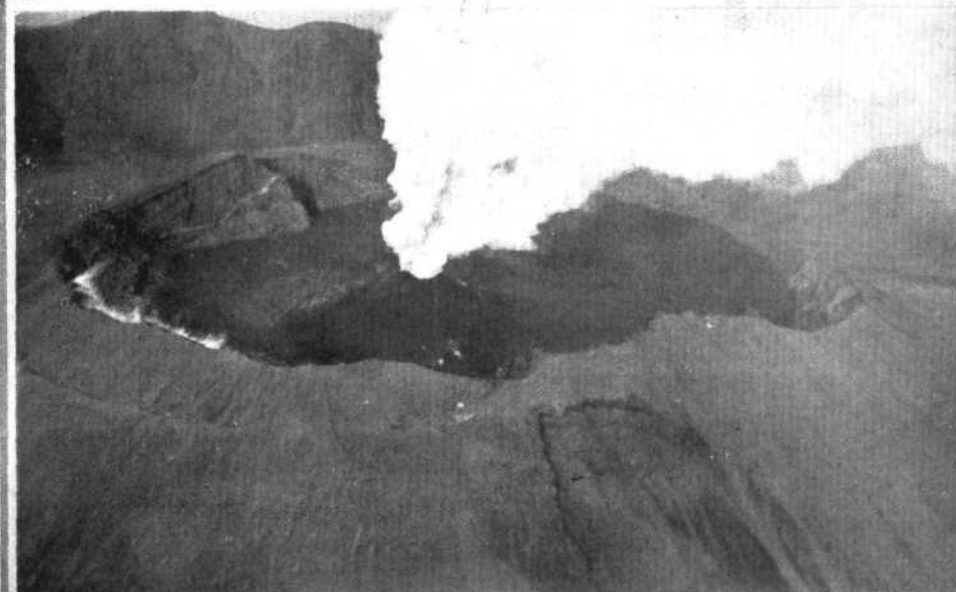
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THE FLIGHT TO EGYPT—I A set of pictures secured by Capt. Geoffrey de Havilland on his recent flight to the East in a "Hercules." 1 is an aerial view of Monaco, while 2 shows a glimpse of the coast of north-western Italy. A bird's eye view of the Colosseum in Rome is given in 3, and the crater of Vesuvius in 4. (See also page 203)

THE CURTISS V-1550 AND GV-1550 ENGINES

A New Aero Engine from the Famous American Factory

THE Curtiss Aeroplane and Motor Co. have recently produced a new aero-engine—of which there are two models, V-1550 direct drive and GV-1550 geared—which has been developed from the D-12 engine that has been giving very satisfactory results during the last two years or so. The D-12 develops from 445 to 455 h.p. at 2,300 r.p.m. in production with a nominal displacement of 1,145 cub. ins., 4½ ins. bore by 6 ins. stroke., the new engines are rated at 600 h.p. at 2,500 r.p.m. for the direct drive and 575 h.p. at 2,500 r.p.m. crankshaft speed for the geared models, with a displacement of 1,550 cub. ins., 5½-in. bore by 6½-in. stroke.

A brief description of the Curtiss D-12 engine appeared in *FLIGHT* for April 24, 1924, and in the following notes on the new engines for which we are indebted to our American contemporary, *Aviation*, comparisons with the D-12 will be made in order to indicate the development that has taken place.

Both models of the new 1550 are designed to go in the same engine bearers as are used for the D-12 engine. From this it will be seen that the bearing areas on the new engines are not greater than those on the D-12, as far as length is concerned. The crankshaft, however, has been increased in diameter from 3 ins. to 3½ ins. to take care of additional bearing area as well as to stiffen and strengthen the crankshaft for the additional power and speed.

In construction, the crankcase, crankshaft and connecting rods are almost identical with those on the D-12. The connecting rod bearings are the same size, but the rods have been increased in section in proportion to the power of the engines. Removable bearing shells are being used on both the main and connecting rod bearings. The bearings in the forked rods are "Non-Gran" bronze, and the bushings in the upper ends of the rods are also made of this material.

The crankshaft is held in place with eight forged duralumin bearing caps which are mounted on the parting line of the crankcases, this line being on the centre line of the crankshaft. The eighth bearing is an out-board one in front of the thrust bearing on the direct drive engine, and in front of the pinion reduction gear on the geared model.

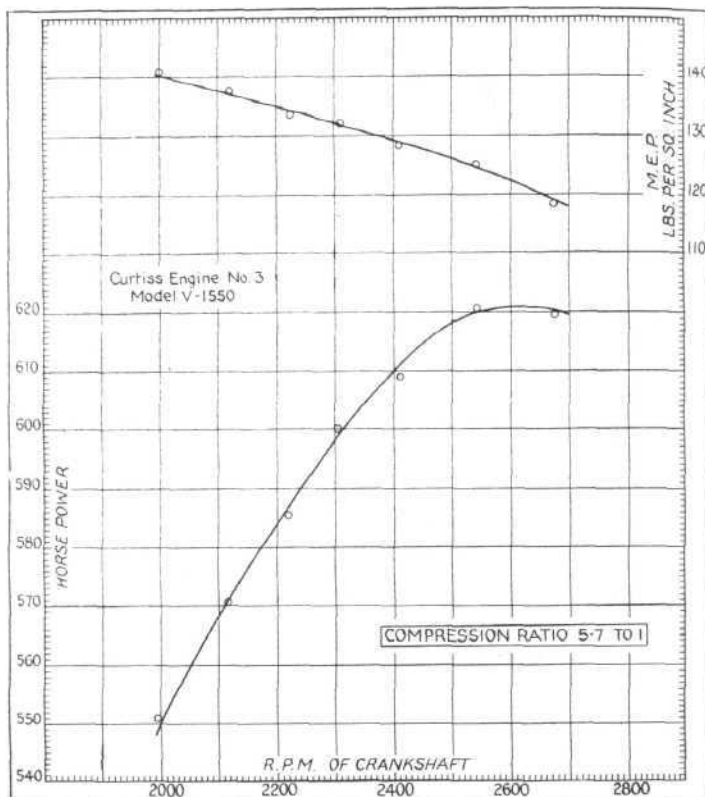
The cylinder block construction differs from the D-12 in the cylinder sleeve and valve arrangement; the D-12 has a closed end sleeve with the valves seating in the closed steel end. The 1550 models use a sleeve open at both ends and screwed into the aluminium head, the valves seating on aluminium-bronze inserts. This type of construction was developed in the V-1400 engines which had a bore and stroke of 4½ ins. and 6½ ins. respectively.

The valve size has been increased to meet the increased displacement, this being possible on account of the larger bore. The Curtiss valve gear using the T-shaped cam followers and double camshafts is retained, although two of the camshaft bearings on each head have been eliminated to save weight.

One double Splitdorf magneto is fitted instead of two single magnetos, this ignition unit having two coils, two breakers, two condensers, and two independent magnetic

circuits operating from one armature, and feeds two ignition distributors mounted on the back end of the cylinder head covers.

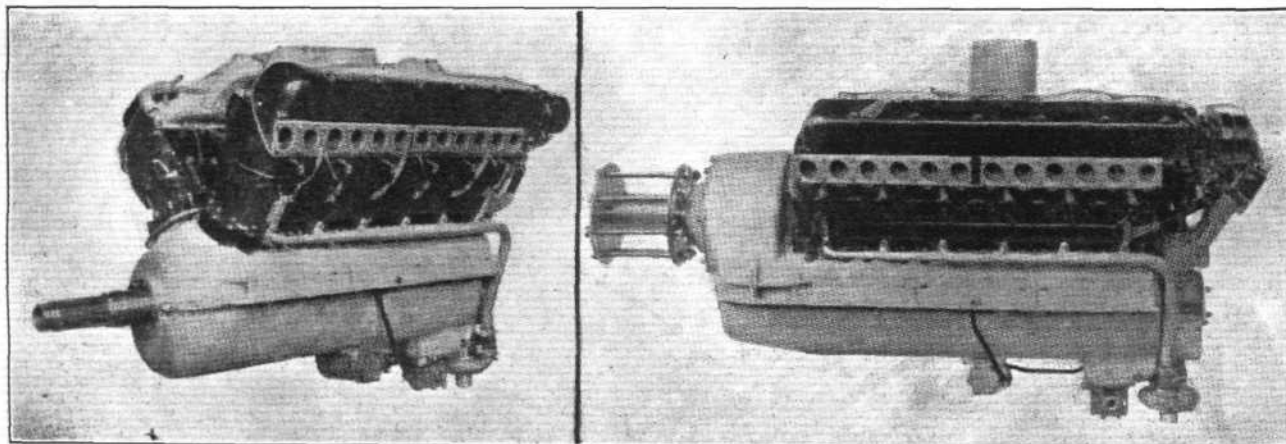
Provision is made for driving both the Curtiss triplex petrol pump and the Air Corps C-5 pump, as on previous engines. The water pump is driven from the top end of the lower vertical shaft, and the oil pump, located on the bottom of the oil pan at the rear of the engine, is driven



THE CURTISS V-1550 AERO ENGINE : Power and M.E.P. Curves.

through spur gears. The gear case is provided with a pad on the upper surface for mounting a vertical generator on the upper end of the vertical shaft. The standard starter pad is provided on the gear case and a dog on the crankshaft is so designed to take a combination jaw and six spline standard clutch.

The cylinders are supplied with mixture by two Stromberg NA-Y6-O carburetors, feeding through the Curtiss open intake manifolds which are well-known for their volumetric efficiency. The conventional type of water cooling is used.



TWO RECENT CURTISS AERO ENGINES : On the left is the V-1550 direct drive, developing 600 h.p. at 2,500 r.p.m. On the right is the geared model, GV-1550, which develops 575 h.p. at 2,500 r.p.m. Both are 12-cyl. water-cooled V-type engines.

consisting of a centrifugal pump feeding the two cylinder blocks at the lower end of the jacket at six points from the two outlets on the pump. Water leaves the topmost point of the head from six points on each head, entering a manifold from which it can be conducted either to a radiator or through a water expansion tank and then to a radiator.

Lubrication is carried out as in the latest D-12 engines—one pressure pump feeding oil directly to the main bearings through an oil manifold attached to the top of the bearing caps. The oil passes into Nos. 2, 4 and 6 main bearings, each of which feed two connecting rods through steel tubes spun into the crankshaft. An annular groove cut into the babbitt of each connecting rod bearings insures pressure feed to the link pin bearings. The piston pin bearings are lubricated by splash. By means of a tube spun into No. 1 main bearing, at the accessory end of the engine, oil is indexed through steel pressure tubes to the camshaft bearings, while the backs of the cams are drilled for lubricating the "T" cam followers. Oil is also fed from this same line to the plain bearings on the upper vertical shaft, the bearings on the lower vertical shaft being lubricated by oil which collects in a large pocket around these bearings.

The oil draining from the camshaft bearings lubricates the ball bearings on the camshafts, driveshafts, and on the upper end of the water pump shaft. Oil is returned to the outside oil tank thus: oil is taken by one pump from the air screw end and is delivered to the other end of the engine, while a second pump picks up the oil from here and delivers it to the outside tank. Thus, any air picked up by the first pump—when the machine is climbing—is discharged into the crankcase, eliminating foaming of oil in the crankcase.

The geared model, GV-1550, is being built at the present time with a gear ratio of 2 to 1, the airscrew turning at half engine speed. Regular Stub-tooth spur gears with a 3-in. face width are used, and the large gear is mounted on a Curtiss flexible coupling which absorbs the shocks in the gear train, insuring long life. After a 50-hour test at 525-535 h.p. these gears showed no wear, being in practically the same condition as when the test started. The airscrew shaft is mounted on plain bearings with the outer bearing in a housing which bolts to the crankcase; the main housing is cast

integral with the crankcase. Thrust is taken on a large deep grooved ball bearing and the bearings on each side of the pinion are plain, the end thrust of the crankshaft, due to its weight when in an inclined position, is taken care of by a small deep-grooved ball bearing mounted in a cap which closes the hole in the crankcase at the end of the crankshaft.

In conclusion, it may be mentioned that the GV-1550 engine passed a 50-hour official Government test at 525 h.p. (2,100 r.p.m.) last year, and, as a result of subsequent testing at higher speeds, has been developed for use at 575 h.p. at 2,500 r.p.m. The direct drive model has been developed for use at 600 h.p. at 2,500 r.p.m., and was used in one of the 1925 Schneider-Cup racers in last year's race. The engine developed, with high compression, a maximum of 708 h.p. at 2,600 r.p.m. and weighed 725 lbs. dry.

The geared model weighs 840 lbs. dry, which gives an additional weight of 115 lbs., due to the gearing. The D.12 engine weighs 680 lbs., so that by the addition of 35 lbs. in weight it has been possible to increase the power by approximately 150 h.p. with a slight reduction in frontal area. This has been made possible by the use of three spur gears driving the double camshafts, the third spur gear being placed as an idler below the two gears on the camshafts; the bevel driving gear is mounted on this third gear. This design drops the bevel gear behind the cylinder block, thereby taking off approximately 2 ins. in width at the back end of the engine. As a result of this change the engine has a maximum width of 26 ins., whereas the D.12 is 28 ins. wide.

The principal characteristics of the V-1550 and GV-1550 engines are:—

	V-1550	GV-1550
Bore	5½ ins.	5½ ins.
Stroke	6½ ins.	6½ ins.
Displacement ..	1,569 cub. ins.	1,569 cub. ins.
Oil consumption ..	.015 lb./b.h.p./hr.	.015 lb./b.h.p./hr.
Fuel consumption ..	.53 lb./b.h.p./hr.	.53 lb./b.h.p./hr.
Rotation of airscrew	Anti-clockwise	Clockwise
Weight of engine dry	720 lbs.	830 lbs.
O.A. length	51 ins.	56½ ins.
O.A. width	26 ins.	26 ins.
O.A. height	35½ ins.	35½ ins.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

COMMITTEE MEETING

THE annual general meeting of the members of the Club was held at 3, Clifford Street, London, W.1, on Wednesday, March 30, 1927. Lieut.-Col. Sir Francis K. McClean, A.F.C., took the chair in the absence of Lord Thomson, chairman of the club.

The chairman, in the course of his remarks, stated that the club required more members. The reduced subscription of £3 3s. to the officers in the Royal Air Force, the Royal Air Force Reserve, and Auxiliary Air Force was a concession which he hoped would result in a large increase during the present year.

During the past year the club had collected and distributed prizes for competitions, races, etc., amounting to nearly £7,000. In addition to the races organised by the club, provincial race meetings had been held by the Lancashire, Newcastle and Yorkshire Aero Clubs, which had proved of immense interest in their respective localities.

The advent of the light aeroplane clubs had resulted in a large increase in the number of licences issued during the year, and there were very satisfactory additions to the number of private owners.

He hoped that members would come forward with subscriptions to the Racing Fund, and so enable the club to give

financial support in the way of prizes to the light aeroplane clubs, who were organising race meetings in various provincial centres this year.

Committee.—The following members were elected to the nine vacancies on the committee:—

Lieut.-Col. M. O. Darby, O.B.E.
Lieut.-Col. John D. Dunville, C.B.E.
Griffith Brewer.
Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S.
Wing-Comdr. T. O'B. Hubbard, M.C., A.F.C.
Lieut.-Col. Sir Francis K. McClean, A.F.C.
F. Handley Page, C.B.E.
T. O. M. Sopwith, C.B.E.
Capt. C. B. Wilson, M.C.

Election of President and Vice-President.—The following were unanimously elected:—

President: Brig.-Gen. the Duke of Atholl, K.T., G.C.V.O., D.S.O.
Vice-President: The Duke of Sutherland.

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.
H. E. PERRIN, Secretary.

Mr. H. T. Tizard's New Appointment

MR. HENRY THOMAS TIZARD, C.B., A.F.C., F.R.S., has been appointed by His Majesty the King in Council to be Secretary to the Committee of the Privy Council for Scientific and Industrial Research on the retirement of Sir H. Frank Heath, K.C.B., from that office on June 1 next.

Women Military Pilots in Italy?

THE Italian Government are considering the proposal of training women to become pilots of aircraft for any emergency in war time. It is reported that schools for women will shortly be opened where they will undergo an intensive course of military aviation and qualify for their tickets.

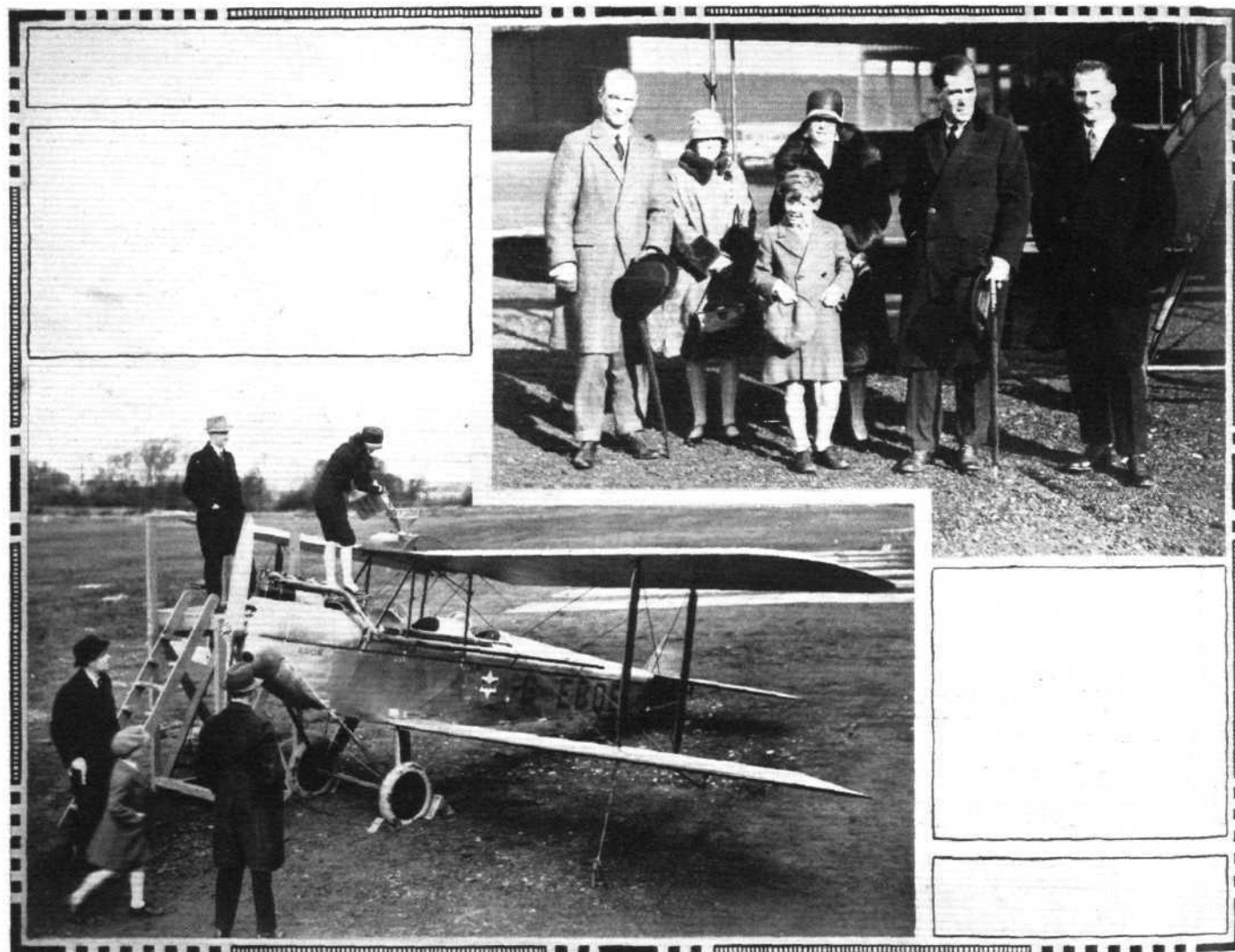
UTILITY OF THE AEROPLANE RECOGNISED

"Shell-Mex" Company Buys a "Moth"

It is somewhat remarkable, but nevertheless true, that hitherto the aeroplane has not been taken seriously by business firms. In stating this we are, of course, referring to the smaller type of aeroplane such as might be used privately by business houses, and not to the large machines used on established air routes; the utility of the latter is already appreciated. A welcome sign that this state of affairs is about to be changed was provided by a little ceremony that took place at the Stag Lane aerodrome of the de Havilland Aircraft Company last week, when Mrs. Wilson, wife of the

In spite of a very strong gusty wind, and generally bad weather conditions, Mr. "Jerry" Shaw, manager of "Shell-Mex" aviation department, took the machine for a flight, and proved himself a pilot of no mean ability. His first passenger in the golden "Moth" was Mrs. Wilson. Incidentally, it is for the use of Mr. Shaw that the company has purchased the "Moth," and he will use it for the more lengthy of his journeys, not only at home, but also abroad, as occasion arises.

The "Shell" company is always among the first to adopt new methods which can improve its service to its customers,



CHRISTENING THE "SHELL" "MOTH" "AROM": The lower photograph shows Mrs. George Wilson performing the ceremony by pouring "Shell" spirit out of a golden can into the tank, Mr. "Jerry" Shaw acting as Godfather. The group in the upper photograph includes, from left to right, Mr. R. H. Sharpe, Miss Brenner, Mrs. George Wilson, Master David Wilson, Mr. George Wilson, Assistant General Manager of "Shell-Mex," and Capt. H. otherwise "Jerry" Shaw.

assistant general manager of "Shell-Mex," Ltd., christened a de Havilland "Moth," which had just been completed to the order of that firm.

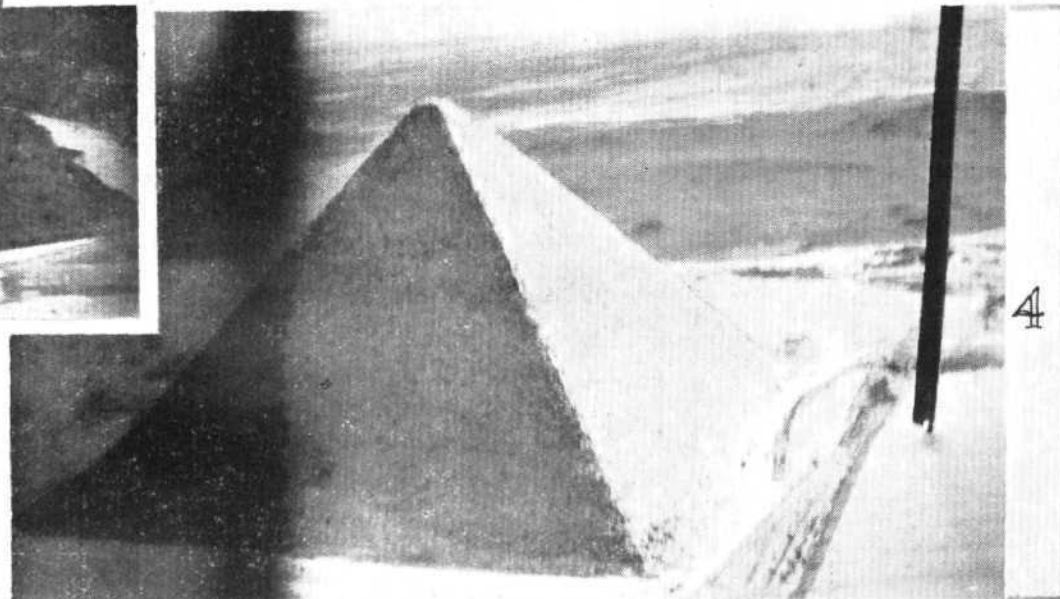
The "Moth" delivered to the "Shell" company is a standard machine with "Cirrus" Mark II engine, but a distinctive appearance has been given to it by the special colour scheme adopted. The fuselage and wings are finished entirely in gold, outlined in red, the wing struts, registration letters, &c., being painted red.

At last week's ceremony Mrs. Wilson christened the machine in a rather novel way. Instead of the more usual procedure of breaking a bottle of champagne on the nose of the "Moth," Mrs. Wilson poured "Shell" spirit from a golden can into the fuel tank of the machine, the tank already having been nearly filled from the pump—representing the modern way of refuelling aircraft. When the tank was full to capacity Mrs. Wilson christened the machine "Arom," being the first two syllables of the word "Aromatics."

and it is not, therefore, surprising that it should be the first to realise the very real utility of the aeroplane, and it is expected that the saving in time which the use of the "Moth" will afford will be of great practical value.

The "Shell" firm is to be congratulated on being the first to realise in a practical way that even in a small country like ours the aeroplane can, on very many journeys, save a great deal of time, and Mr. "Jerry" Shaw, who is already regarded as being something of a ubiquitous wonder, will doubtless become even more so with the aid of "Arom," which will soon become a familiar sight at all our aviation gatherings and at aerodromes generally.

It is to be hoped that, now that "Shell-Mex" has set the fashion, many other important business houses will follow suit. When that happens we shall be a good deal nearer to real commercial aviation than we are at present. As Major Wronsky said at the R.Ae.Soc. recently, "transport is developed not for the sake of traffic but for the sake of trade."



THE FLIGHT TO EGYPT—II : A further set of pictures showing, 1, view on the east coast of Sicily ; 2, lady passengers standing by the " Hercules " on Sollum aerodrome ; 3, refuelling the " Hercules " at Sollum ; 4, one of the Pyramids from above, and 5, the " Hercules " in front of the new hangar at Heliopolis. (See also page 199)



The Service African Flights

THE double service flight across Africa—one from north to south and the other from south to north—is now in progress. The four South African Air Force machines (D.H. 9's), piloted by Maj. Meintjes, Capt. Tasker, and Lieuts. Schoeman and Klopper, left Pretoria on March 29 en route for Kisumu, where they will meet the southward bound R.A.F. Flight. The latter, comprising four Fairey 3F machines from No. 47 Squadron under the command of Air Commodore C. R. Samson, left Heliopolis aerodrome, Cairo, on Mar. 30. Full details of these two expeditions were published in our issue for March 17, so it will only be necessary to repeat here that the R.A.F. Flight is flying to the Cape and back, and that when the two forces meet at Kisumu they will proceed to Nairobi to take part in manoeuvres, after which they will continue the journey south together. The four R.A.F. machines arrived at Assuan the same day they started from Cairo, and the next day they proceeded to Khartoum, arriving at Malakal on April 2, and Mongalla on April 3. On April 4 they arrived at Kisumu, and the next day the four South African D.H. 9's also reached Kisumu.

Pinedo's Progress

THE Marchesse di Pinedo continued his round-Atlantic flight from New Orleans on April 2, when he flew in his Savoia S.55 seaplane to San Antonio, Texas. On the way he made a stop of about three hours at Galveston, where he met with a most enthusiastic reception. He was escorted into San Antonio by five U.S. Army Air Service machines, and alighted in the Medina Lake, some distance outside the city. Here hundreds came to give him a hearty welcome. New engines were fitted in the machine at Buenos Aires—but only, according to Pinedo himself, as a matter of precaution, the original engines being still fit, if somewhat "tired," after their ordeal. New engines will probably also be fitted at New York prior to the second Atlantic crossing.

Fast Naples-London Flight

ONE of the Fokker air liners of the Royal Dutch Air Lines flew from Naples to London in a flying time of 13 hrs. 20 mins., carrying three passengers and a crew of three. On March 30 it made a non-stop flight from Naples to Paris, 950 miles, and the entire journey to London, including a 17-hours' stay in Paris, was completed in 30 hrs. By rail and boat the time would have been 48 hours.

A Burma Air Mail

BURMA's air mail is being carried between Rangoon and Tavoy and Mergui, 245 miles, which are otherwise only served with mail by a weekly sea service. Mr. Neville Vincent, now engaged on forest survey for the Air Survey Company, recently accomplished the flight in 3½ hrs. The sea passage takes 48 hrs.

Air Mails to India

THERE appears some confusion amongst the public with regard to air mail to India. There is no service in operation yet and there cannot be whilst the Persian Government is holding its ban on British aeroplanes flying over Persian territory. What does exist is a fortnightly air mail service between London and Basra, announced in the Post Office Circular last January, mail being carried beyond this point by steamer.

B. S. Leete Crashes at Lahore

WHILST Lady Hailey, wife of the Governor of the Punjab, was descending in a *Moth*, piloted by Mr. B. S. Leete, at the Lahore Aerodrome, India, on April 2, the machine struck some telegraph wires and crashed. Fortunately, Lady Hailey was not hurt and the pilot only slightly hurt, although the *Moth* was badly damaged.

Lord Thomson Visits Beardmore's

LORD THOMSON inspected Messrs. Beardmore's aero engine works at Parkhead and the aerodrome at Dalnair, on April 4, afterwards being entertained to lunch by Sir John Reid, and later addressing a large meeting of cadets from the public schools of Glasgow. He said that every lad who learned to fly was performing a patriotic duty. Military aviation required tremendous skill to make a man better than any possible enemy, but to all intents and purposes civil aviation was safe. In connection with Lord Thomson's

visit Captain Broad, with Lord Clydesdale as passenger, flew up from London in a *Moth*, but had to land at Dumfries owing to heavy rain and very bad visibility, which was not more than 100 yards.

Surveying London's Traffic from the Air

IT is decided that a survey of the traffic congestion in the different centres of the City of London will be made from the air in order to ease the difficulty now causing so much waste of time and danger to the community. Aerial photographers have been engaged to fly over the city and obtain pictorial maps of the flow of traffic through the main streets, and the network of narrow side streets which cannot cope with the bulk of traffic that struggles through them. No similar scheme has hitherto been adopted, and the results are to be watched with interest by the authorities.

No Beach Landings at Bournemouth

THE Bournemouth Town Council has turned down the proposal for reserving a section of the beach for aeroplane landings, one objection being that the noise of the machines would interfere with the band concerts on the piers. As far as we can remember from a visit to Bournemouth we doubt if the noise of a Napier "Cub" could be heard above the din that sometimes prevails on the beach round about the pier!

Three-engined Junkers on Tour

A THREE-ENGINED Junkers monoplane of the G.31 type left Dessau early in March and made a tour extending via Berlin and Vienna to Venice. The machine was piloted by the well-known Junkers pilot Zimmermann. From Venice the machine continued on to Rome, where it was inspected by various high officials, and on March 28 the G.31 left Rome and, flying along the Riviera, reached Barcelona in a flight of eight hours. In spite of unfavourable weather, the tour was continued on to Madrid, where the machine is at present giving demonstration flights. The engines fitted are Junkers.

Junkers J.33W. beats Duration Record

AFTER a few days' rest—merely sufficient, in fact, for changing the undercarriage into a float instead of a wheel type—the Junkers J.33W with 320 h.p. L-5 Junkers engine established, on March 29, a new world's record for seaplanes by a non-stop flight of 14 hrs. 7 mins. with a useful load of 500 kgs. (1,100 lbs.). The pilot was Loose. The previous record was held by America, and was of 7 hrs. 35 mins. In the same flight the record for distance with this useful load was also beaten, the Junkers machine covering 1,702 kms. (1,065 miles). Both records have been submitted to F.A.I. for homologation.

Junkers G.24 establishes Three Records

CARRYING a useful load of 2,000 kgs. (4,400 lbs.), a three-engined Junkers of the G.24L type with 3-250 h.p. Junkers L-2 engines established three world's records on April 1 (!). The time in the air was 7 hrs. 52 mins., the distance covered 1,018 kms. (628 miles), and the average speed 138 kms. (85·7 miles) per hour. The records have not yet been homologated.

Dakar-Casablanca Mail 'Plane Missing

ONE of the machines engaged on the air mail between Dakar and Casablanca is reported missing between Port Louis and Port Etienne, and a number of machines are searching for it.

Anti-Aircraft Cuts?

THE air defence brigades for London are concerned at the issue of the new establishment for the anti-aircraft artillery brigades, making approximately a 30 per cent. cut in the establishment of men per battery. It means that all recruiting for these brigades will stop for nearly a year. It is hoped that some compromise will be effected, and further announcements are being awaited with interest.

Fleet Air Arm; Course for Naval Officers

A NEW course for officers qualifying as naval observers in the Fleet Air Arm began April 4. The gunnery course in the *Excellent* will last until May 3, and the signal course in the *Dryad* until June 22. After a three weeks' interval the second part will begin at the R.A.F. School of Naval Co-operation, Lee-on-Solent, on July 12. The number of naval and marine officers trained as pilots is now over 120.

LIGHT 'PLANE CLUBS

London Aeroplane Club

Flying Time.—The total flying time for the week ending April 3, was 58 hrs. 40 mins.

Instructors.—Capt. F. G. M. Sparks, assisted when required by Flying Officer R. W. Reeve, Capt. A. S. White and Capt. C. D. Barnard.

Dual Instruction.—G. Black, J. Rich, T. Symmons, Miss Spooner, H. G. Riches, G. H. Saxon Mills, L. C. Davey, E. J. B. King, J. McClure, L. Martin, Miss Fletcher, G. M. Randall, Lord Clydesdale, H. O. Gugenheim, F. Clarkson, Lady Bailey, Miss O'Brien, L. W. Gibbins, A. J. Richardson, R. Drysdale Smith, J. J. Hofer, J. A. Simson, A. S. Mulder, A. C. M. Jackman, E. Rose Richards, H. M. Samuelson, H. S. Greenland, G. C. Bonner, Dr. Cook, Mrs. Cook, A. Lees.

Solo Flying.—Miss O'Brien, N. Jones, A. R. Ogston, G. Terrell, O. J. Tapper, Major K. M. Beaumont, D.S.O., G. H. Craig, J. H. Safery, G. C. Bonner, Sir John Rhodes, A. Lees, E. D. Moss, R. Sanders Clark, H. Solomon, R. P. Cooper, Capt. H. Spooner, R. Malcolm, A. J. Richardson, G. M. Randall, A. F. Wallace, T. W. Eady, D. H. P. Esler, R. P. Cooper, K. V. Wright, L. Bramson.

Passenger Flights.—H. J. Beckett, L. C. Davey, Miss Mackenzie, G. F. Wilson, Miss Marler, D. R. Lee, G. Lambert, H. J. Greenland, D. A. Wilson, Mrs. Skinner, Miss Judge, Miss Forsyth, B. M. Whiteside, Miss Clarke, E. T. Symmonds, O. S. Barros, Miss Spooner.

Flying Time for March.—The total flying time for the month of March was 169 hrs. 45 mins., made up as follows:—

Dual Instruction	..	..	148 flights	..	..	70 hrs. 20 mins.
Solo Training	..	..	46 "	..	..	18 " 55 "
Solo Flying	..	..	152 "	..	..	60 " 10 "
Passenger Flights	..	..	29 "	..	..	9 " 30 "
Test Flights	..	..	65 "	..	..	10 " 50 "
			440			169 " 45 "

During the month 107 individual members of the Club were in the Air.

Club Committee.—The Club Committee met on Monday, March 28, 1927 when there were present Capt. C. B. Wilson, Lady Bailey, N. H. Jones, Major K. M. Beaumont, D.S.O., and H. E. Perrin, Secretary.

It was decided to enter two D.H. "Moths" and the "Bristol" Brownie for the Bournemouth Air Races providing there were two D.H. "Moths" available for the Club at Stag Lane during the period of the races. The selection of the pilots for the various events was left to Major K. M. Beaumont, N. H. Jones and H. E. Perrin.

The Committee decided to draw up a list of definite routes for members to take for navigation instruction.

Bournemouth Easter Air Races.—The following members have been selected to pilot the Club machines in the various events:—

Flight from Stag Lane to Bournemouth on Thursday, 14th inst., leaving at 5.30 p.m.

D.H. "Moth" G-EBNY, O. J. Tapper in charge. Passenger: Capt. H. Spooner. D.H. "Moth" G-EBKT, Major K. M. Beaumont in charge. Passenger: G. C. Bonner. "Bristol" Brownie, G. Terrell.

Christchurch Handicap Stakes.—D.H. "Moth" G-EBKT, Major K. M. Beaumont. D.H. "Moth" G-EBNY, Capt. H. Spooner. "Bristol" Brownie, G. H. Craig.

Ensby Park Stakes.—"Bristol" Brownie, Capt. F. G. M. Sparks.

Bournemouth Aerial "Oaks."—D.H. "Moth" G-EBKT, Miss O'Brien.

Winton Handicap.—D.H. "Moth" G-EBKT, Capt. F. G. M. Sparks.

Branksome Circus Handicap Stakes.—D.H. "Moth" G-EBKT, A. R. Ogston. D.H. "Moth" G-EBNY, G. Terrell.

Boscombe Stakes.—D.H. "Moth" G-EBKT, Capt. F. G. M. Sparks.

Bournemouth Hotels Association Sweepstake.—D.H. "Moth" G-EBKT, M. L. Bramson. D.H. "Moth" G-EBNY, L. J. C. Mitchell. "Bristol" Brownie, Flying Officer P. G. Lucas.

Bournemouth and District Business Houses Sweepstake.—D.H. "Moth" G-EBKT, G. Terrell. D.H. "Moth" G-EBNY, O. J. Tapper. "Bristol" Brownie, G. H. Craig.

Holiday Final Handicap.—D.H. "Moth" G-EBKT, E. D. Moss. D.H. "Moth" G-EBNY, O. J. Tapper. "Bristol" Brownie, M. L. Bramson.

The Hampshire Aeroplane Club

REPORT for week ending Friday, April 1. Once again our flying time was restricted by very high winds and rain, the total time for the week being 4 hrs. 5 mins.

Instruction flying, 2 hrs. 40 mins.; solo flying, 40 mins.; test flights, 25 mins.; Joy riding, 20 mins.

The following members had instruction:—Everett, 30 mins.; Courtney, 30 mins.; Mellor, 20 mins.; Stanford, 20 mins.; Southcliffe, 20 mins.; Vanden Burgh, 15 mins.; Stokes, 10 mins.; Shepherd, 10 mins.; and Ash, 5 mins.

The only soloist was Don Juan de la Cierva. We must apologise for having previously noted this gentleman as Senor de la Cierva, our knowledge of the Spanish form of address was rather shaky.

On Wednesday, March 30, the annual general meeting was held at the Southampton Chamber of Commerce, and the Chairman, Mr. O. E. Simmonds reviewing the activities of the club during the past year, pointed out the milestones in its short history.

These were the delivery of the two "Moths" in August; the first annual dinner in December, at which an establishment fund was founded; the commencement of the work of providing suitable club house premises; the appointment of a full-time salaried secretary; and, lastly, the decision to hold a pageant in May.

The total membership to date was 213, comprising 84 pilot members, 19 observer members and 110 associate members. Twenty-seven members are now flying solo, and the total number of hours flown to date is 351.

It is highly probable that two more machines will be loaned to the club for a more or less indefinite period; but more of this anon.

The establishment fund has now reached the total of £720, and the pageant prize fund over £300 in addition to four very fine trophies which have been presented by the President, Rt. Hon. Lord Louis Mountbatten, Sir Charles Wakefield, W. R. Morris, Esq., of Cowley, and FLIGHT.

The following members were elected to fill vacancies on the committee: Messrs. R. J. Parrott, B. T. Rumble, K. Macrae, and C. J. Hair.

Lancashire Aero Club

REPORT for week ending April 2.—Total flying time for the week, 28 hrs. 40 mins., made up as follows:—Dual with Mr. Brown: Messrs. Muggrave, 1 hr. 35 mins.; Caldecott, 1 hr. 15 mins.; Gerrard, 45 mins.; Terres and Ward, 40 mins. each; Serke and Cohen, 35 mins. each; Forshaw, Stern, Heys, Mulder and Meades, 30 mins. each; Nelson and Abdalla, 25 mins. each; Miss Brown 20 mins.; Messrs. Anderson, Benson, Dickinson and Hardy, 15 mins. each; Ruddy, 10 mins. Dual with Mr. Scholes: Mr. Ruddy 20 mins.

Solo: Messrs. Birley, 5 hrs. 40 mins.; Costa, 2 hrs. 5 mins.; Abdalla, 50 mins.; Wade, 40 mins.; Dickinson and Twemlow, 35 mins. each; Michelson, 20 mins.; Benson, Lacayo and Williams, 10 mins. each; Nelson and Forshaw, 5 mins. each.

Joy rides: With Mr. Lacayo—Messrs. Caldecott, 1 hr.; Hartley, 35 mins.; With Mr. Brown—Miss Armstrong, 30 mins.; Mr. Smith, 10 mins.; With Mr. Scholes—Messrs. Haigh, 20 mins.; Mathew, 10 mins.; Mrs. Boyes, 10 mins.; With Mr. Goodfellow—Miss Bodenham, 30 mins.; With Mr. Leeming—Mr. Wescott, 25 mins.; With Mr. Costa—Mr. Abdalla, 20 mins.; With Mr. Cantrill—Mr. Mathew, 15 mins.

Test Flights: 1 hr. 35 mins.

Despite one crash, much rain and persistent high winds, the week has been quite a good one. IR was crashed on Sunday evening (for description see below), but the staff, working like beavers (not of the "King" variety) had her in the air again by Wednesday.

Fourteen members were flying solo during the week, and of these, two, Messrs. Nelson and Forshaw, made successful debuts as soloists, while two more, Messrs. Benson and Abdalla, rejoined the ranks of the soloists with distinction, after a prolonged absence from the field of flying. Mr. Birley put in no less than 5 hrs. 40 mins. solo flying. Other soloists please copy.

One regrets having to report a grave breach of the club rule which says: "The assistant secretary shall not be disturbed in his office except on business." Last Sunday, Mr. Atherton was sitting in the hut on the edge of the aerodrome quietly making up the returns, when he was pained to observe



LONG-DISTANCE JOB: The Avro "Avian," with "Cirrus" Mark II. engine, on which Mr. Bert Fankler (standing by the machine) proposes to make a flight to Australia shortly. Note the neat "nose" which the in-line "Cirrus" has made possible.

Mr. Williams entering through the window, preceded by the nose of IR, which he happened to be piloting. The following conversation is reported to have taken place:—

Mr. Atherton (removing a propeller, six planks and eleven panes of glass from his hair): "Tut-tut, Mr. Williams, I'm afraid I'm very busy just at present. Some other time, perhaps—"

Mr. Williams (from the cockpit, covered with confusion and debris): "So sorry, Mr. Atherton, my mistake entirely. But I DID knock, you know." Well, well. Boys will be boys. Three hearty cheers for the B.A.I.G., anyway.

Midland Aero Club, Ltd.

REPORT for week ending April 2.—The total flying time was 6 hrs. 33 mins. The following Members were given dual instruction by Capt. McDonough:—A. Ellison, R. L. Jackson, E. P. Lane, S. H. Smith, C. Fellowes, T. Ellison, J. C. Rowlands.

The following pilots made solo flights:—G. V. Perry, H. J. Willis, E. J. Brighton.

Passenger with Mr. Brighton:—E. P. Lane. High winds again restricted flying.

The Newcastle-upon-Tyne Aero Club

REPORT for week ending April 3.—The weather during the week was moderate, and no flying was possible on Saturday or Sunday, the Club's only *Moth* having been taken off service. Total time: 16 hrs. 55 mins. Dual, 12 hrs. 30 mins. Solo (training), 3 hrs. 55 mins. Passenger flights by Mr. Parkinson, 30 mins.

Mr. T. E. M. Wardill was launched on Monday and Mr. J. A. T. Middleton, on Friday, each making excellent landings.

The following members flew under instruction with Mr. Parkinson:—Miss C. R. Leathart, Mr. Mathews, Mr. Phillips, Mr. Bell (all advanced dual), Mr. Heaton, Mr. Wardill, Mr. Jewett, Mrs. Heslop, Mr. Stewart, Mr. Rasmussen and Mr. Middleton.

Solo: Messrs. Mathews, Bainbridge, Stewart, Wardill, Middleton, Bell. Members of the "Blue Train" Company visited the Aerodrome on Friday, and among those who had joyrides were Mr. Billy Howse and Mrs. Howse, Miss Stack and Miss Dalziel.

The Yorkshire Aeroplane Club

REPORT for the week ending April 3.—Total flying time for the week: 8 hrs., consisting of 3 hrs. solo flying and 5 hrs. dual instruction. In all, 28 flights were made.

Messrs. Wood, Wayman, Dawson, N. B. Lax, Mann and Norway flew solo, and Messrs. Wilson, A. K. Lax, Oglesby, Dawson, Batcock and D. D. Little received dual instruction.

Capt. West, our pilot instructor, is leaving us tomorrow (Monday) and is going to Brough for his course of Reserve Training, on the completion of which one understands he intends to join some joy-riding concern, as a pilot. We wish to make known our deep appreciation of Capt. West's excellent capabilities as a pilot and instructor and our gratitude to him for his services, wishing him all success and good fortune in whatever he undertakes. Mr. Beck, who is to take his place, is expected to arrive during the course of the week.

Notice to Members.—Sir Alan Cobham is to visit Leeds on April 11 and 12, and will lecture on his Empire flights at 3 p.m. and 8 p.m. both days. The directors of the club have been able to reserve a number of seats for club members for the evening lectures. Tickets, price 4s. each, may be obtained from the Secretary.



To be Married

A marriage has been arranged, and will take place on June 1, at St. James's Church, Paddington, between DAVID WILLIAM FREDERICK BONHAM-CARTER, Flying Officer, R.A.F., son of Mr. Walter Henry Bonham-Carter, of 5, Sussex Gardens, Hyde Park, W.2, and JOYCE ANGELA, younger daughter of the Rev. Canon H. J. PALMER, and Mrs. Palmer, of 24, Warwick Gardens, Worthing.

The engagement is announced between HERBERT DONALD HARMAN, M.C. (late Captain R.A.F.), second son of Mr. and Mrs. Clement Harman, of 45, Lancaster Gate, W., and DOROTHY, younger daughter of Mr. and Mrs. ROBERT G. D. FLEMING, of Bigaton, Buckfastleigh, South Devon.

The marriage arranged between Mr. CYRIL RUTHERFORD MASON, R.A.F., and Miss ALICE LOCKE, daughter of Mr. and Mrs. H. Locke, of Caterham Valley, will take place at the Parish Church, Lingfield, on April 19, at 12.15 p.m.

The engagement is announced between HARRY REDVERS McLAREN REID, D.F.C., R.A.F., elder son of the late Mr. H. Reid, of Buenos Aires, and Mrs. Reid, of Florence, Italy,

and MARGARET, widow of Maj. H. A. GOLDSMITH, M.C., I.A., and elder daughter of Dr. and Mrs. Copeman, of Hove, Sussex.

The engagement is announced between Flight-Lieut. V. R. SCRIVEN, A.F.C., R.A.F., youngest son of Mr. and Mrs. E. J. Scriven, of Ealing, London, and HILDA JEAN, youngest daughter of Sir John and Lady GRICE, of Melbourne, Australia.

Death

CAPTAIN THOMAS HUNTER NESBITT, M.B.E., late R.A.F., of 38A, Trebovir Road, S.W.5, who died at Johannesburg very suddenly, on March 31, was the only surviving son of Thomas Hunter Nesbitt, of 27, Redcliffe Square, S.W. He was in his 37th year.

Item

The will of the late SIR ALFRED GEORGE GREENHILL, F.R.S., of Staple Inn, W.C., and the Athenæum Club, the mathematician, famous for his work in aeronautics and gunnery, who died on February 2, has been proved at £13,225.



NEW STYLE GLIDING: A new form of gliding was demonstrated on March 16 at Cassel, in Germany, by Herr Espenlaub. His glider, shown above, was towed into the air by an ordinary aeroplane and at a height of 5,000 ft. the tow rope was detached, and he 'planed down to the aerodrome. The tow rope was so joined as to be quickly detachable by either pilot in case of any danger. It is intended to hold an exhibition of this form of gliding at Cassel next May.

THE BELGIAN VI INTERNATIONAL COMPETITION FOR LIGHT AEROPLANES

To be held at Brussels in the Spring of 1927

THE Royal Aero Club of Belgium is organising, under the regulations of the F.A.I., a meeting at the Evere Aerodrome of Brussels in the spring of 1927 for light aeroplanes and touring aeroplanes. The meeting will be under the patronage of the Ministries of Railway, Posts, Telegraphs, Telephones, Marine and Aeronautics, and will be donated with three challenge cups and money prizes totalling 27,500 Belgian francs. The three challenge cups to be presented are that of His Majesty the King of the Belgians, one by D. Nicolaides and the International Challenge Cup for Avionettes. The exact date of the meeting has not yet been fixed, but will be announced later.

The entrance fee for the competition is 500 Belgian francs, returnable in the case of machines which have passed the eliminating tests. Entries should be sent in registered letter to the Treasurer of the Royal Aero Club of Belgium, 73, Avenue Louise, Brussels, by a date not later than ten days before the eliminating trials, and which will be announced later. All the usual information concerning machines, engines, pilots, etc., is required, and the competition is open to machines conforming to the following conditions:—

(a) Possess an airworthiness certificate in the country of origin; (b) be able to carry normally for the first category pilot and one passenger weighing 80 kilos. (176 lbs.) each, and 40 kilos. of luggage, tools, etc., *i.e.*, a total of 200 kilos. (440 lbs.); in the second category machines must be able to carry a pilot of 80 kilos. and 20 kilos. of luggage, *i.e.*, total of 100 kilos. (220 lbs.); the occupants must be comfortably accommodated; (c) the first category comprises two-seater machines weighing less than 400 kilos. empty; the second, single-seaters weighing less than 350 kilos. according to the recent F.A.I. classification of light planes; (d) machines must have a practical range of 450 km. (280 miles).

THE TESTS

The competition will comprise the following tests:—

- (a) Take off, with a maximum of 50 points.
- (b) Landing, with a maximum of 90 points.
- (c) High speed, with a maximum of 30 points.
- (d) Low speed, with a maximum of 20 points.
- (e) Fuel consumption, with a maximum of 20 points.
- (f) Transport by road, dismantling, etc., with a maximum of 70 points.
- (g) Altitude, with a maximum of 20 points.
- (h) In addition, a maximum of 50 points will be awarded for the selling price of the machine, in accordance with regulations given later.

The competitors will be classified in accordance with the number of points obtained in the various tests.

(a) *Take Off*.—The take-off distance will be measured from the starting line to the point where the wheels of the machine definitely leave the ground. A competitor will be penalised one-third point per metre or fraction of a metre by which he exceeds 50 m.

(b) *Landing*.—In this test competitors must fly over a cord supported at 2 m. height above the ground, and pull up in the shortest possible distance without damage to the machine. The landing must be a normal one and at right angles to the cord. Competitors will be penalised one-half

point per metre by which the distance of 50 m. from the obstacle is exceeded.

(c) *High Speed*.—The speed course for this test will be in the form of a circuit of 50 kms. (31 miles), and competitors will be timed round the course. Points will be awarded in the following manner. If T' is the time of the winner, T'' the time of the second, and T''' the time of the third competitor, and so on, the first will receive 30 points, the second $30 \times \frac{T''}{T'}$.

(d) *Low Speed*.—This test will be flown over a straight-line course of 50 m. marked out on the aerodrome, and at a height of 5 m. above the ground, and points will be awarded as follows:—If T' is the time of the winner, T'' the time of the second, and T''' the time of the third, the first will receive 20 points, the second $20 \times \frac{T''}{T'}$.

(e) *Consumption*.—Before the start in this test the machines will be placed on the starting line and the petrol and oil tanks will be filled quite full. The tanks will then be sealed and the machines will be required to fly a circuit of 100 kms. around a marked course. At the landing the officials will fill up the tanks from graduated containers, and points will be awarded as follows: if K' , K'' , and K''' are the quantities of petrol and oil in cubic centimetres, the winner will receive 20 points. The machine having consumed in the first category more than 20 kgs. of petrol and oil, and in the second category more than 12 galls. of petrol and oil, will receive 0 point, and the others in each category a proportional number of points.

(f) *Transport by Road and Dismantling*.—This test will consist in dismantling the wings of the machine and re-erecting them, and the time will be taken for the two operations, the total allowed not exceeding one hour. A competitor who requires more than one hour for the dismantling and re-erecting will be penalised by two points per minute in excess of the hour. A maximum premium of five points will be awarded for the transport by road, machines to qualify for this requiring to fold into a width not exceeding 2.5 m.

(g) *Altitude*.—In this test machines are required to climb to 2,000 m. (6,600 ft.) in the shortest possible time. The control of the test will be by two barographs supplied by the competitor, and if the two barographs do not read the same, only the most favourable will be used in judging. Points will be awarded as follows: if T' is the time of the winner, T'' the time of the second, and so on, the winner will receive 20 points, the second $20 \times \frac{T''}{T'}$, and so on. If neither

barograph functions, the competitor will receive 0 points.

(h) *Selling Price of Machine*.—In order to qualify for the maximum of 50 points in this clause of the regulations, a competitor will be required to furnish to the secretary of the Sporting Committee of the Club a signed statement concerning the price at which he is prepared to supply his machine, this price being based on a series of six machines, and the machine to be in a condition ready for flight.

For all information concerning this competition, enquiries should be addressed to the Secretary of the Sporting Committee of the Royal Aero Club of Belgium, 73, Avenue Louise, Brussels.

ON TO VINCENNES

An International Aerial Rally for Touring Aeroplanes to be held on June 5 and 6, 1927

In order to bring home to the general public of France the advantages of aerial locomotion, the Society for the Development of Aviation is organising an international competition on June 5 and 6, 1927 under the title "Rallye Avions Paris-Vincennes." This competition will be open to all nationalities who are represented on the F.A.I., and will take place on the occasion of the International Aviation Meeting organised on the Polygone at Vincennes on June 5 and 6. The competition is donated with prizes to the value of 100,000 francs.

The Competition

Competitors will fix their own day and time of departure, with the only reservation that they must cover a distance of at least 300 kms. (186 miles), and must arrive at the Vincennes Polygone on June 5 between 2.30 p.m. and 3.30 p.m. Competitors arriving before or after this time will be penalised. The place and time of departure, and the number of passengers, must be indicated in the machine's log book, and these log book entries must be certified by the manager of the aerodrome from which the machine starts. The start must

be observed by an official of the national club of the country from which the start is made. The distance traversed will be measured between the point of departure and the point of arrival without detours being taken into account. In the case of intermediate landings at aerodromes, the route book of the machine must be signed and must give the time of arrival, the time of departure and the number of passengers on board.

As the competition is organised essentially with a view to encouraging aerial touring, the speed and duration of the flight "On to Vincennes" are left at the discretion of competitors, but competitors must nevertheless conform to certain regulations in force concerning the aerial routes of the countries flown over. Competitors will also be required to comply with the usual customs formalities, etc. No minimum weight is specified for crew and passengers of machines, but all persons on board must be at least 18 years old.

Entries at single fee of 500 francs per machine should be sent to the *Société pour le Développement de l'Aviation*, at 30 rue Caulaincourt, Paris, and will be received up to 6 p.m. on May 9. Entries will, however, be received at double fee (1,000 francs per machine) up to 6 p.m. on May 28. The entrance fees are not returnable except in the case of machines refused admission to the competition. All entries should be accompanied by the usual information concerning the machine, engine, registration letters, etc., and the number of passengers carried. An exchange of machines *en route* is not permitted, but pilots may be changed.

Arrival in Paris

The control at the Polygone, Vincennes, will be open on June 5 from 2.30 to 3.30 p.m. Upon their arrival competitors must cross the finishing line in flight. Upon landing, the machines must be submitted to an examination by the officials.

Classification

A fairly complicated system of classifying machines according to points will be employed, the awards being made according to the following regulations:

As already mentioned, distances from the starting point to Vincennes will be judged on the straight line distance between the two points, and will not take account of any detours which may be necessitated by regulations concerning flying, such as customs aerodromes, etc. For distance, points will be awarded as follows: 0.01 point per complete kilometre up to 1,000 kms.; 0.015 point from 1,000 kms.

to 1,500 kms.; 0.020 point from 1,500 kms. to 2,000 kms.; and 0.025 point per kilometre above 2,000 kms.

Speed.—The mean speed will be determined according to the formula $V = \frac{D}{T}$ where D represents the distance

flown, T the total lapsed time between the start and the arrival at the aerodrome of Vincennes. The actual hour of starting should be officially observed by a representative of the club governing flying in the country of origin of the machine, but in the case of countries not represented on the F.A.I., or countries so represented but where it is not found possible for an official observer to be present at the start, competitors will be required to send to the organising committee before May 22 the date and time at which they intend to start, and this will then be the official starting time. Points will be awarded as follows:—

One point per km. up to 14 km./hr. mean speed; 0.17 point from 14 to 50 km./hr.; 0.20 point from 50 to 100 km./hr.; 0.23 point from 100 to 125 km./hr.; 0.26 point from 125 to 150 km./hr.; 0.30 point from 150 to 175 km./hr.; 0.35 point from 175 to 200 km./hr., and 0.50 point per km./hr. for speeds of 200 km./hr. and over.

Useful Load

For useful load carried per horse-power of engines, points will be awarded as follows, the useful load comprising the number of persons carried inclusive of crew:—

One point if power expenditure is more than 200 h.p. per occupant; 1.5 points for 151 to 200 h.p.; 2.2 points for 101 to 150 h.p.; 3.3 points for 71 to 100 h.p.; 5 points for 51 to 70 h.p.; 7.5 points for 41 to 50 h.p.; 11 points for 31 to 40 h.p.; 16 points for 26 to 30 h.p.; 23 points for 21 to 25 h.p.; and 33 points for power expenditures below 20 h.p. per occupant.

Passengers Carried.—Two points will be awarded for each person carried on board during the flight to Vincennes, the pilot not being included in this. For machines coming from foreign countries 5 points will be awarded for crossing the frontiers of France, irrespective of the number of frontiers crossed en route to the French border. Competitors arriving before 2.30 p.m. will be penalised by 50 points. Competitors arriving between 3.30 and 4 p.m. will be penalised by 3 points and after 4 p.m. competitors will be penalised by 5 points for each 30 minutes or fraction of a half-hour, up to 6 p.m., the closing time of the control.

Competitors will be classed according to points obtained, and the winner of the first place will receive 60,000 francs, second place 30,000 francs, and third place 10,000 francs.



TWO NEW BOOKS

HISTORY OF EASTCHURCH*

THIS brief history of the famous air station at Eastchurch by Flying Officer R. H. W. Empson, reference to which was made in a recent issue of *FLIGHT*, is a welcome addition to the ever-growing number of books on aeronautics, for this station is closely linked with the very earliest experiments in aviation and all subsequent progress. It can be regarded as a monument to the work of the Short Brothers, for they settled at Leysdown, a mile or so from Eastchurch, in 1909, to build some of the first aeroplanes, attracting to them those pioneers who are famous in aeronautical history today and eventually instigating the very creation of the Royal Naval Air Service. Through the importance and success attending the experiments there, the Admiralty were persuaded to send the first four naval officers to learn to fly, and from that time the naval invasion never released its hold. It developed until it was important enough to be regarded as an individual force amongst the defences of the country. When the war came, Eastchurch sent out the first units for action abroad, and they continued to train all ranks in bombing, gunlaying, and flying all during the war, with Leysdown as an extension, chiefly for the more dangerous training activities, owing to its convenient water-front. Short Brothers moved their workshops to Eastchurch as their work expanded and made very early experiments with floating gear for sea landings, a trend that has led them to their present prominence in seaplane design. One of their machines made the first deck ascent, in 1911. This book is chiefly written in a chronological style, and is very interesting for its personal detail. Essentially the leading figures who have been connected with

Eastchurch between 1909-1926 are here assembled, and perhaps the first few pages that deal with the original efforts and experiences of the days before the war are the most useful and fascinating. But it is all very readable and has a simple, straightforward style.

"CLIMATE AND GEOGRAPHY"†

WEATHER conditions naturally play an important part in the running of air routes. Observations must prelude flying and guide the progress of the flight. This is mostly the concern of the meteorological experts, who convey their knowledge to the pilot, but it is necessary for the latter not to be altogether dependent on them. He should be able to make ordinary observations and have some idea of the general causes and effects of weather. "Climate and Geography," by O. J. R. Howarth, has not been written primarily for the airman, but it is a simple and interesting treatise on elementary facts and owes some collaboration to the Meteorological Section of the Air Ministry. It is, for the most part, a series of condensed paragraphs on nearly all climatic conditions, such as rainfall, wind, temperature, pressures, and depression. It is offered as a supplement to existing text-books, but it is, broadly, complete on its subject and quite understandable to the lay reader.

* "The History of the Eastchurch Air Station, Sheppey, 1909-1923," by Flying Officer R. H. W. Empson, R.A.F. Copies, price 9d. per copy, may be obtained from the author, Eastchurch, Kent.

† *Climate and Geography*.—By O. J. R. Howarth. Oxford University Press, London. Price 1s. 6d. net.

IN PARLIAMENT

Air Routes in Italy

SIR H. BRITAIN on March 29 asked the Secretary of State for Air whether he can inform the House as to any new air routes being opened out by Italy this summer; and whether they will connect up with the routes from this country?

Sir Philip Sassoon: I understand that proposals have been made for the following four new air routes in Italy: (1) Venice-Rome (extension of Vienna-Venice route). (2) Palermo-Cagliari-Baleare Isles-Barcelona. (3) Brindisi-Rome. (4) Rome-Bologna-Munich. So far as I am aware these routes have not yet progressed beyond the proposal stage, and they do not connect with any air routes from this country.

London-Prague Air Services

LIEUT.-COMMANDER KENWORTHY, on March 30, asked the Secretary of State for Air whether he can report any progress in the negotiations with the German Government for permission to fly from London to Prague via Cologne; if he is aware that the Czechoslovakian aviation interests are negotiating with a Dutch company for an air line from Prague to Amsterdam; and what steps he is taking to expedite the establishment of the British air line to Prague?

Sir Samuel Hoare: As regards the first and last parts of the question, negotiations in connection with the proposed establishment of an air line to Prague are at present in progress between Imperial Airways, Ltd., and the Czechoslovakian authorities and until they are nearer completion it would be premature to reopen with the German Government the question of permission for a Cologne-Prague air service. As regards the second part, I have seen an announcement in the press but have no official information on the subject at present.

Lieut.-Commander Kenworthy: Is the right hon. Baronet aware that this matter has been held up for three years with the German Government, and will he seek help from the Foreign Office to have these restrictions on our Air service removed?

Sir S. Hoare: I think there is a misapprehension. The negotiations are between the Prague authorities and the Imperial Airways Co. It is not a question of Government intervention.

Lieut.-Commander Kenworthy: Is it not a fact that the German Government refused to allow our aeroplanes to fly to Prague over their territory, and that they held us up in that way before?

Sir S. Hoare: No, Sir; that is not the obstacle. The obstacle is in the details of the arrangements between the Prague authorities and the Imperial Airways Co., and as soon as they are removed I am ready once again to take up the other question with the German Government.

Sir H. Britain: In the meantime, is there anything the right hon. Gentleman can do to assist in these negotiations, as he will be the first to admit that Prague is very much the centre of the air from this point of view?

Sir S. Hoare: It is a question of money. Anything I can do I will do. That is the obstacle.

Air Port, Croydon

COLONEL DAY asked the approximate date when the completion of the improvements and reconstruction of the air port of London at Croydon will take place?

Sir S. Hoare: It is expected that the work will be completed by the summer of 1928.

Schneider Cup Race

LIEUT.-COMMANDER KENWORTHY asked if the British seaplanes intended to take part in the Schneider Cup race are to be loaned by his Department; if they are the high-speed Supermarine-Napier, Gloster-Napier, or Short machines; when these aircraft will be completed; and what steps he will take, having regard to the short time available, to ensure that Great Britain is represented in the competition, if in their trials neither of the three seaplanes now being built attain a speed which would justify their competing in the Schneider Cup race?

Sir S. Hoare: Entries for the Schneider Cup race are made by the Royal Aero Club, and the Air Ministry has not hitherto accepted responsibility for ensuring the representation of this country in the competition. The question is, however, under consideration of making available for the race certain high-speed aircraft ordered by the Air Ministry of the types mentioned in the question; they are all due for completion well before the date fixed for the race.

Lieut.-Comdr. Kenworthy: Does the right hon. gentleman not lend aeroplanes to the Aero Club for this race?

Sir S. Hoare: Not necessarily. We consider the cases on their merits each year.

Air Missions

MR. DALTON asked what air missions, if any, have been sent by His Majesty's Government to assist the Governments of foreign countries since 1914; and what has been the duration of their service in each case?

Sir S. Hoare: Apart from war-time missions, the following missions have been despatched by His Majesty's Government for the purpose of advising foreign Governments on air matters:—

Chile.—An officer of senior rank was sent to Chile in 1926 and is still in that country.

Finland.—After a preliminary investigation by a senior officer of the Royal Air Force another officer was lent for a period of two years from March, 1925; the engagement has recently been extended for a further six months.

Greece.—Royal Air Force officers formed part of the Naval Missions during the periods from December, 1919, to October, 1920, and from August, 1922, to April, 1923. In response to an application for further assistance from the Greek Government two officers have recently proceeded to Athens.

China (Central Government).—A Royal Air Force officer was employed from February, 1920, to September, 1922.

In addition to the above official missions a number of unofficial missions have proceeded to foreign countries, and in connection with these, informal advice and assistance in the selection of personnel have been given by the Air Ministry.

Airship Sheds (Cardington and Howden)

MR. ROSE asked the Secretary of State for Air if he will give the dimensions of the airship sheds at Cardington and Howden prior to the alterations which have been made to adapt them for the construction of the two 5,000,000 cubic feet displacement airships?

Sir S. Hoare: The inside clearances of the sheds before alteration were as follows:—

	Cardington		Howden	
Length	700	750	180	150
Width	110	130		
Height				

The length of the Cardington shed has been increased to 812 ft., and the height to 156 ft.; the width remains unaltered. The height of the Howden shed has been increased to approximately 140 ft. by the removal of a girder over the doorway and of the runway at the top of the shed; the length and width remain unaltered.

Parachutes

VISCOUNT SANDON asked the Secretary of State for Air from what country the silk used in the service parachutes comes; whether it can be procured in this country or the Empire; and whether, if not, any effort is being made to secure that it shall be in future?

Sir S. Hoare: As regards the first part of the question, the silk is woven in Japan. As regards the remaining parts, efforts have been made to obtain the silk from sources in this country, but so far without success. It is essential to adhere rigidly to the specification in regard to weight and strength and thus to eliminate any risk of failure and consequent loss of life. I may add that the question of a possible British source of supply is still being pursued.

Royal Air Force Aircraft Visits to Provincial Centres

COL. DAY asked whether it has been decided to commence a series of air-flag flights; and, if so, how many Royal Air Force craft will be utilised for this proposed flight, the approximate date when they will commence, and the cities it is proposed to visit?

Sir S. Hoare: I am not quite clear to what flights the hon. Member refers, but arrangements have been made for a formation of four service aircraft to visit Leeds, Liverpool, Bristol, Nottingham, and Birmingham. These five visits will take place shortly after Easter, and are the maximum number which can be arranged without interference with the normal training programme.

Air Services (Persian Territory)

SIR F. SYKES asked the Secretary of State for Air (1) whether, seeing that the Persian Government are signatories to the International Air Convention for Civil Flying, and have contested the rights of British civil aircraft under that Convention to fly over Persian territory, he will say what steps are being taken to secure an interpretation of the Convention clauses governing this matter?

(2) Whether the Persian Government have contested the right of erection and maintenance of British civil aerodromes in Persian territory; whether the erection and maintenance of these aerodromes were entered into under agreement with the Persian Government; and, if so, what period of maintenance and use was covered by such agreement?

(3) Whether the Imperial Airways Company's service between Iraq and India cannot begin on the date anticipated owing to prohibition by the Persian Government; and whether it has been made clear to the Persian Government that the proposed flights over Persian territory are for civil purposes only, and that His Majesty's Government have no intention of departing from international law governing military flights, under which the flight of British belligerent aircraft over Persia is definitely prohibited and the flight of military aircraft in times of peace is subject in every case to the specific permission of the Persian Government?

Sir S. Hoare: Negotiations through the normal diplomatic channel are still proceeding, and accordingly I should prefer not to make any statement at this stage.

Airships

MR. HARDIE, on March 31, asked the Secretary of State for Air whether the two airships to be constructed at Cardington and Howden respectively are to be rigid or non-rigid constructions; and will he state what materials are to be used for the framework?

Sir Philip Sassoon: Both airships will be of the rigid type; both duralumin and stainless steel are being used in the framework of the Cardington airship and duralumin in that of the Howden airship.

Mr. Rennie Smith asked the number of airships which have been constructed to date in this country, their total cost, and the number of miles flown by each of them?

Sir P. Sassoon: The number of rigid airships constructed or partially constructed was 19, at a cost of between three and a half and four millions sterling. Figures for the number of miles flown by each of these vessels are not available.

Mr. R. Smith asked when the two airships at present under construction will be ready for service?

Sir P. Sassoon: It is not possible to give firm dates. The airships cannot be ready for service until they have completed exhaustive trials. I have already stated in my memorandum accompanying Air Estimates that both airships should be flying in 1928.

Civil Aviation Grants

MR. RENNIE SMITH asked the sums of money paid each year since 1919 by the Government in aid of civil aviation and the names of the parties, with the amount paid in each case?

Sir P. Sassoon: No subsidies were granted during the years 1919-20 and 1920-21. The following table gives the information requested in respect of the years 1921-22 to 1926-27:—

	1921-22.	1922-23.	1923-24.	1924-25.
	£	£	£	£
Transport Companies.				
Daimler	—	39,304	54,936	1,854
Handley Page	37,150	34,169	20,822	2,331
Instones	38,475	45,818	32,363	2,578
British Marine Air Navigation	—	—	3,846	178
	75,625	119,291	111,967	6,941

Cost of aircraft for above:—1922-23, £62,461; 1923-24, £2,566.

De Havilland (Plymouth-Belfast Mail-carrying):—1923-24, £1,672; 1924-25, £50.

Imperial Airways:—1924-25, £131,520; 1925-26, £137,000; 1926-27, estimated: (a) £142,480 European services; (b) £30,000 Egypt-India services.

Miscellaneous:—Society of British Aircraft Constructors for Gothenburg Exhibition (1923-24), £8,500; Lloyd's Register (aircraft), £553.

Light Aeroplane Clubs:—1925-26: Lancashire, £3,000; London, £3,030; Midland, £2,500; Newcastle, £3,020; Yorkshire, £1,235.

1926-27 estimated: Hampshire, £2,270; Lancashire, £550; London, £982; Midland, £1,080; Newcastle, £1,100; Yorkshire, £2,285.

Royal Air Force Contribution

MR. LANSBURY, on April 4, asked the Under-Secretary of State for India the amount of the contribution received from the Government of India during the last five years on account of the Royal Air Force units used for service in India; and whether the cost of the sea transport of the Royal Air Force personnel to India is included?

Earl Winterton: The average contribution for the last five years paid to the Air Ministry in respect of their expenditure on the recruitment and training of Royal Air Force personnel for India was £98,000. This is independent of transport charges, which are borne by India and of the direct expenditure of the Government of India on the pay and maintenance of Royal Air Force units in India.

ROYAL AERONAUTICAL SOCIETY

Annual General Meeting

THE sixty-second annual general meeting of members of the Society was held in the Society's offices, 7, Albemarle Street, on March 29. Col. the Master of Sempill, Chairman of the Society, presided.

Mr. W. P. Savage, Mr. G. H. Dowty and Mr. P. Narraway were appointed scrutineers of the ballot for the election of new members to the Council.

As a result of the ballot the following members were declared duly elected to serve on the council for the two years ending March, 1929: Wing-Comdr. T. R. Cave-Browne-Cave, Sir Mackenzie Chalmers, Mr. A. E. L. Chorlton, Mr. C. R. Fairey, Mr. J. E. Hodgson, Maj. R. H. Mayo, Col. Mervyn O'Gorman, Mr. T. O. M. Sopwith, Sir Vyell Vyvyan, and Dr. H. C. Watts.

The Council report of the year 1926-27 and the balance sheet and accounts were dealt with.

Rules 18, 19 (a) and 19 (c) were amended to read as follows:

"The President must be a voter, and shall be appointed by the Council. He shall take office for one year, but shall be eligible for re-election for a further period of one year after his first year of office. If elected for a second year he shall not be eligible again for further election until two years have elapsed, since the expiry of his second year of office, when he shall be eligible. He shall be an *ex-officio* member of the Council and of all Committees appointed by the Council."

"At a meeting held in June in each year the Council shall appoint a Chairman, who shall take office in the following October, and hold office for one year. He shall be an

ex-officio member of the Council and of all Committees appointed by the Council. He shall be eligible for re-election on the expiry of his year of office for one further year, but, if elected for a second year, he shall not be eligible again for further election until two years have elapsed, since the expiry of his second year of office, when he shall be eligible."

"The Vice-Chairman of the Council shall be the retiring Chairman. He shall be an *ex-officio* member of the Council and of all Committees appointed by the Council, and shall hold office for one year. In the case of a Chairman being elected for two years in succession the Council may ask the existing Vice-Chairman to continue his office for a second year, or may elect a member of the Council to its office for the same period."

The following resolution was proposed by Mr. H. T. Tizard, and seconded by Mr. J. D. North:—

"That this meeting supports the action of the Council in endeavouring to come to an agreement with the Institution of Aeronautical Engineers on the lines discussed in the Beharrell Report, and authorises the Council, if satisfied that the general body of the voters of this Society and of the Institution of Aeronautical Engineers endorses their views, to carry the amalgamation into effect with such alteration to the draft terms of the agreement that appear to them desirable."

On a show of hands the resolution was declared carried by a large majority.

J. LAURENCE PRITCHARD, *Sec.*

THE WILKINS ARCTIC EXPEDITION

THE second air expedition into the Arctic organised by Capt. Wilkins has not made a very successful start. As originally planned, three aeroplanes were to have departed from Fairbanks, Alaska, on March 17, and flown to Point Barrow, the extreme northern point of Alaska. Captain Wilkins intends to establish his base there, from which he will carry out flights over the unexplored areas round the Pole. The two Stinson machines (named *Detroit News* No. 1 and *Detroit News* No. 2, after the newspaper which is backing the expedition financially), fitted with ski-runners, and a third machine, one of the Fokkers used last year, named the "Alaskan," formed the aerial equipment. The entire personnel of the expedition was to be transported to the northern base by air, each machine being equipped with rations for eighteen days in case of a forced landing, and also with a rifle shotgun, 340 rounds of ammunition, a collapsible boat, and a first-aid kit.

The "Alaskan" carried wireless for communication with Fairbanks, while No. 1 machine carried the scientific equipment. In addition to Capt. Wilkins, the expedition includes Alger Graham (pilot), C. B. Eielson (pilot), Orwil H. Porter (mechanic), Howard Mason (wireless), etc. The flight to Point Barrow is hoped to be accomplished in three leaps of 180 miles each, crossing the Endicott Mountains by the Anaktuvuk Pass. The chosen course will keep the planes always within 20 miles of water to afford a safe descent in case of any trouble. When the "Alaskan," loaded with 4,200 lbs. of equipment, tried to take off on or about March 25, it failed to do so, and after three attempts overturned and was damaged. Later, one of the Stinson machines got away, but some days elapsed before any further news of it was received. It appears that engine trouble was experienced, and Capt. Wilkins had to land on the ice.

ANTIQUITY*

WE have before us the first number of "Antiquity," a quarterly review of Archaeology, edited by O. G. S. Crawford, F.S.A. In addition to being most excellently produced, this first number contains matter that kept its present reviewer thoroughly interested—almost fascinated—from cover to cover. The various articles and notes should, in our opinion, appeal not only to the student of archaeology—and to him they must obviously be of considerable value—but the ordinary "man-in-the-street-and-especially-the-air" will surely find them of more than usual interest. For, apart from the fact that archaeology is always an interesting subject in itself, we have found that the articles in "Antiquity" are written in a style that should be understood by all—one need not be an "expert" in order to glean the information available. By this, however, we do not infer that they are written in what is generally known as a "popular" style, for they are, of course, intended primarily for the archaeologist himself.

We have, on frequent occasions, pointed out in *FLIGHT* the immense value of aircraft in connection with archaeological research, and it is not surprising therefore that the part played by aircraft in this direction figures prominently in "Antiquity." Thus, we find in the "Editorial Notes":—"Excavation remains the most valuable instrument of discovery we

possess. It may be supplemented by field-work and air-photography. The uses of air-photography are only beginning to be properly appreciated, and they are many. Air-photographs reveal lost or unsuspected remains, such as "Woodhenge" and the Stonehenge Avenue; they show the excavator where to dig for walls, ditches, or pit-dwellings; they reduce a tangle of earthworks to order and may prove their relative ages; they are invaluable to the lecturer and writer to illustrate his thesis. . . . We intend to use air-photographs, whenever possible, for the purpose of illustrating articles, and, reversing the process, to select some of the best available photographs for use with explanatory text and diagrams. Amongst the most startling are some taken in Iraq which, for the most part, are unpublished."

In the current number of "Antiquity," several very interesting aerial photographs are reproduced; two (taken by No. 480 Flight, R.A.F., Calshot), clearly indicate the submerged wall on Samson Flats, Scilly Is., where, once upon a time, it is supposed a fertile land—"Lyonesse"—lay between the islands and Cornwall, now covered by the waters of the Atlantic. An excellent aerial photograph also illustrates an article on "Stonehenge as an Astronomical Instrument," while perhaps the most interesting of all are some taken by Sq. Ldr. Insall, V.C., M.C., of prehistoric Timber Circles ("Woodhenge"), a unique monument, the presence of which was quite unknown until revealed by the photographs.

We shall certainly look forward with interest to the publication of subsequent issues of "Antiquity."

Antiquity.* A quarterly review of archaeology, edited by O. G. S. Crawford, F.S.A. Single copies, price 5s. 6d., obtainable from Messrs. John Bellows, Gloucester, or through any bookseller. Annual subscription, £1, payable to the Editor, O. G. S. Crawford, Nursling, Southampton.

THE ROYAL AIR FORCE

London Gazette, March 29, 1927

General Duties Branch

The following Pilot Officers are promoted to rank of Flying Officer:—R. Kellett, G. P. Chamberlain (Jan. 30); P. E. Berryman, J. A. Hawkins, W. L. Robertson, R. C. Whitle, G. P. Butcher (Feb. 7). The following Pilot Officers on probation are confirmed in rank:—D. J. R. Hylton (Feb. 26); W. J. H. Lindley (March 5).

Flight-Lieut. J. D. Breaky, D.F.C., is placed on half-pay, scale B, March 28 to 31, 1927, inclusive.

The following Flying Officers are transferred to the Reserve, Class A:—E. Wormell (March 30); A. E. B. Bateman, H. W. Pierce (April 1). Flying Officer B. F. H. Harding relinquishes his short service commission on account of ill-health (April 1); P. D. Oliver, Lieut. (E), R.N., Flying Officer, R.A.F., relinquishes his temp. commn. on return to Naval duty (March 23) (substituted for *Gazette*, Feb. 8); Pilot Officer on probation H. Francis resigns his short service commn. (March 30).

Stores Branch

Flying Officer F. R. Lines is granted a permanent commn. in this rank with effect from April 6, 1926, on completion of probationary service. The following

Pilot Officers are promoted to rank of Flying Officer (March 10):—F. W. Felgate, L. F. Caunter.

Accountant Branch

Flying Officer F. C. Langley is granted a permanent commn. in this rank (March 30).

Memorandum

Flying Officer J. N. Hewlett-Brooke relinquishes his temp. commn. on ceasing to be employed with the Electrical Services Works Co. (March 31).

Reserve of Air Force Officers

The following are granted commns. in Class A.A., General Duties Branch, as Pilot Officers on probation:—J. M. H. Hoare, G. F. Simond, L. Strangman, J. D. Williamson (March 14); K. A. N. Madocks (March 16); B. B. F. Russell (March 17). Pilot Officer R. E. La F. Wyatt is confirmed in rank (March 10); Flight-Lieut. C. F. Briggs is transferred from Class C to Class A (March 5); Flight-Lieut. W. W. McConnachie is transferred from Class A to Class C (Jan. 8); Flight-Lieut. W. R. S. Humphreys, A.F.C., ceases to be employed with the Regular Air Force (March 31).

The following relinquish their commns. on completion of service:—Flying Officer F. V. Webb (March 18); Pilot Officer C. O. Hinks (March 25).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commander G. F. Pretymann, D.S.O., O.B.E., to Sch. of Naval Co-operation, Lee-on-Solent, to command, 28.3.27.

Flight Lieutenants: B. McEntegart to No. 1 Sch. of Tech. Training (Apprentices), Halton, on transfer to Home Estab., 7.4.27. R. L. Crofton, M.B.E., A.F.C., to H.Q., Egypt, 12.3.27.

Flying Officers: P. McK. Terry, to No. 480 Flight, Calshot; 17.3.27. A. C. Meredith, to No. 1 Sch. of Tech. Training (Apprentices), Halton; 21.3.27. J. C. Marcy, to R.A.F. Depot, on transfer to Home Estab.; 16.3.27. D. F. W. Atcherley, to No. 5 Flying Training Sch., Sealand, on appointment to a Temp. Commn., on being seconded from the Army; 19.3.27. C. A. Bell and P. E. Berryman, to No. 28 Sqn., India; 1.3.27. (Hon. Flight-Lieut.) V. J. Somerset-Thomas and R. W. G. Lywood, to No. 4 Flying Training Sch., Egypt; 22.3.27. D. W. Gibbon, to No. 216 Sqn., Egypt; 22.3.27. A. H. Willetts, to No. 481 Flight, Malta; 22.3.27. A. D. Gillmore, to No. 208 Sqn., Egypt; 22.3.27. D. S. Thomas, to Home Aircraft Depot, Henlow; 4.4.27. T. O. Oakes, to Station H.Q., Bircham Newton; 23.3.27. R. H. Rose, to R.A.F. Depot, Uxbridge, on transfer to Home Estab.; 5.2.27. V. A. C. Ross, to No. 100 Sqn., Spittlegate; 21.3.27.

Flying Officers: H. E. Falkner to Aircraft Depot, India, 26.3.27. G. A. F. Bucknall, A. E. Rogenhagen, E. J. H. Wright, D. S. Green, and D. C. Shaw, to No. 1 Squadron, Tangmere, 1.4.27. (Hon. F./Lt.) L. P. Winters to No. 4 Flying Training School, Egypt, 12.3.27. J. M. Burd, M.C., to School of Naval Co-operation, Lee-on-Solent, 12.4.27. E. C. Roark, to R.A.F. Depot, Uxbridge, on transfer to Home Estab., 11.3.27. T. J. E. Thornton to No. 9 Sqn., Manston, 28.3.27. E. R. Hockaday to Record Office, Ruislip, 4.4.27.

Pilot Officers: K. Garston-Jones, to R.A.F. Depot, Uxbridge; 17.3.27. H. N. C. Williams, to R.A.F. Depot, Uxbridge; 21.3.27. N. C. H. Barrett, to R.A.F. Depot, Uxbridge; 24.3.27. J. C. McE. Gibb, to R.A.F. Depot, Uxbridge, on transfer to Home Estab.; 11.3.27. J. C. McE. Gibb, to No. 39

Sqn., Spittlegate; 24.3.27. C. R. McEvoy, to No. 2 Sqn., Manston; 1.4.27. A. P. de Wouff de Wytt, C. E. Eckersley-Maslin, J. E. McC. Henderson, D. J. R. Hylton, and E. G. Olson, to Aircraft Depot, India; 16.2.27. P. A. Moritz, and H. T. A. Silcox, to No. 14 Sqn., Palestine; 10.3.27. The under-mentioned Pilot Officers are posted to No. 5 Flying Training Sch., Sealand, on appointment to Short Service Commns. (on probation), with effect 19.3.27: P. F. G. Bradley, P. D. Cracroft, R. David, R. C. Hancock, S. Hatton, G. N. S. Lane, A. G. Mace, G. W. Monk, A. G. C. Somerhough, and J. E. Stuart-Lyon.

Pilot Officers: G. Bradbury to No. 41 Sqn., Northolt, 7.4.27. H. G. Loch, K. S. Brake and L. C. Bennett, to No. 1 Sqn., Tangmere, 1.4.27. H. F. Gower to R.A.F. Depot, Uxbridge, 1.4.27. E. J. Martin, to R. A. F. Depot, Uxbridge, 4.4.27.

Stores Branch

Flight Lieutenant F. E. Shersby to No. 10 Group H.Q., Lee-on-Solent, on transfer to Home Estab., 15.3.27.

Medical Branch

Sqn. Ldr. H. McW. Daniel, M.D., to R.A.F. British Hospital, Iraq; 21.2.27. Flight Lieutenant C. A. Lindup, to Station H.Q., Bircham Newton; 4.4.27.

Flight Lieutenants: J. D. Leahy, M.C., M.B., B.A., to No. 1 Flying Training Sch., Netheravon, 30.3.27. W. J. G. Walker to Armament & Gunnery Sch., Eastchurch, 21.4.27. (Hon. Sq. Ldr.) H. E. H. Tracy and W. E. Barnes, to No. 1 School of Technical Training (Apprentices), Halton, 1.4.27.

Flying Officers: J. D'I. Rear, to R.A.F. Practice Camp, Weston Zoyland; 1.4.27. R. G. Freeman, to R.A.F. Practice Camp, Sutton Bridge; 1.4.27. L. Freeman, to R.A.F. Practice Camp, North Coates Fitties; 1.4.27. S. F. Heatley, M.B., B.A., to Pathological Lab., Halton; 25.3.27. A. L. St. A. McClosky, to R.A.F. Depot, Uxbridge; 29.3.27.

Flying Officers: M. D. Rawkins to No. 1 Sch. of Tech. Training (Apprentices), Halton, 1.4.27. E. J. T. McWeeney, M.B., to Research Lab. & Med. Officers' Sch. of Instruction on appointment to a Short Service Commn., 24.3.27.

AIR MINISTRY NOTICES

Government-Owned Aerodromes. Prices of Petrol, &c.

1. The following prices will be charged from March 28, 1927, and until further notice for aviation petrol and motor spirit issued for civil aviation at Government-owned aerodromes:—

Per gallon, exclusive of container:—Aviation mixture, 1s. 10½d.; aviation petrol, 1s. 8½d.; motor spirit, Grade I, 1s. 4½d.; motor spirit, Grade III, 1s. 2½d. Prices for aviation petrol and motor spirit in Scotland, 1d. more in each case. Prices for aviation petrol and motor spirit in Northern Ireland, 2d. and 1d. more respectively.

(No. 21 of 1927.)

Royal Air Force Stores Officers. Openings for Young Business Men

The Air Ministry announces that 15 to 20 vacancies for permanent commissions in the Stores Branch of the Royal Air Force will be offered for competition among young men between 23 and 25 years of age, who have had not less than five years' business experience in a firm of standing. This is the second competition under the scheme initiated last year to obtain men with a business training to control and administer the supply of the highly valuable and complex equipment of the Royal Air Force.

From among applicants a limited number will be selected to sit for an examination in the light of the information furnished by them and by gentlemen whom they will be asked to name as referees. The examination will be held in London and will consist of two parts, an interview before a board and a written examination in English, general knowledge and arithmetic. The written examination will be of such a character that men of good general education can take it without special study.

Accepted candidates will be gazetted to commissions as Pilot Officers on probation and will receive six months' training in their future duties. After a year's satisfactory service, they will be eligible for confirmation in their appointments and for promotion to the rank of Flying Officer. Promotion above the rank of Flying Officer will be by selection.

The pay of a Pilot Officer in the Stores Branch is 12s. 2d. a day, and, including the value of allowances which may be provided in kind or in cash, the total emoluments amount at present to approximately £365 a year. The similar figure for Flying Officers on promotion will be £401, and for Group Captains (the highest rank for which provision is made) £1,140. The expenses in Royal Air Force messes are strictly regulated, so that officers even of the most junior rank can live on their pay. Rates of pay are subject to

variation in accordance with the cost of living. The appointments are pensionable. Enquiries for copies of the regulations and for application forms should be made in writing to the Secretary, Air Ministry, London, W.C.2. Completed application forms should reach the Air Ministry not later than May 23.

Institution of Aeronautical Engineers

At the General Meeting of the Institution, held on March 29, the following resolution, regarding the amalgamation with the Royal Aeronautical Society, was unanimously passed:—

That this institution being of opinion that it is desirable in the best interests of the British aeronautical profession that this Institution should amalgamate with the Royal Aeronautical Society, Hereby Resolves to amalgamate with the Royal Aeronautical Society upon the terms agreed between the Council and the Council of the Royal Aeronautical Society, and dated 27th January, 1927.

And this Institution authorises the Council of the Institution to do all things necessary for the purpose of carrying the agreed terms into effect.

Torsional Vibration

At a meeting of the Junior Institution of Engineers, held on March 18, Mr. J. Calderwood, M.Sc., read a paper entitled "An Investigation of Torsional Vibration with particular reference to Aircraft Engines."

Mr. Calderwood said that there was available a vast amount of published information on the general subject of vibration, but on examination it would be found that very little work, mathematical or experimental, had been done on the particular problems which had to be considered by the designer of a machine liable to suffer from critical periodic torsional vibration of its shafting. In many cases, where trouble had been experienced due to torsional vibration, damping devices had been used. While a machine might, with heavy damping, run at a critical speed without fracture of the shaft, it was not under those conditions running economically, for a large amount of power was absorbed in damping the vibration. The alternative was to arrange the shafting of an engine in such a manner that the critical speeds were all either above or below any speed at which the machine might be required to operate continuously in service.

In an appendix to his paper, Mr. Calderwood gave some formulae for the calculation of the natural frequency of vibration of various arrangements of shafting such as occurred in aeroplane and airship engines.

The paper concluded with a brief note on the measurement of torsional vibrations.

CORRESPONDENCE

[The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.]

DIRECTORY OF SOURCES OF SPECIAL INFORMATION

[2157] Just as the practical utility of a book is impaired by the want of an index, so the vast aggregation of knowledge that has been built up, and is in many cases being added to day by day, is largely lost to mankind owing to the lack of a master-key to its whereabouts. Throughout this country there are numerous centres of specialised knowledge and experience of the most varied description, the existence of which has only to be known for them to prove of great service to the world.

It is with the object of bringing these to light and recording their salient features in concise form that the Association of Special Libraries and Information Bureaux, in collaboration with the Carnegie United Kingdom Trust, has asked me to compile a Directory.

It has been decided to go forward with the printing of a first edition of this Directory at midsummer, but much still remains to be done. It is recognised that completion in any one subject is well-nigh impossible in so short a time. It would, however, greatly further this end if libraries, organisations, firms and individuals possessing special information on any subject, and willing to answer inquiries thereon, which have not yet been in touch with us, would communicate with me at 38, Bloomsbury Square, W.C.1.

G. F. BARWICK, General Editor,
Late Keeper of Printed Books, British Museum.

DEATH OF MR. E. R. CALTHROP

WE very much regret to announce the death of Mr. Everard Richard Calthrop, whose name is familiar to readers of FLIGHT in connection with the famous "Guardian Angel" parachute. Mr. Calthrop who died at his home at Maida Hill on March 30, was born on March 2, 1857, and commenced his engineering career at Robert Stephenson and Company's Works at Newcastle-on-Tyne, and eventually became apprenticed (1874) at the L. and N.W. Railway Crewe works. Subsequently, Mr. Calthrop became associated with a considerable amount of railway work, at one time being assistant locomotive superintendent to the Great Indian Peninsular Railway. While in India he took up the question of narrow-gauge light railways, in which connection his name is identified in no small degree in various parts of the world, Mr. Calthrop having executed many surveys for light railways in England and abroad.

In 1892 he commenced a practice in England as consulting engineer, and amongst other matters, took up the question of parachutes as life-saving appliances from aircraft, becoming in 1916 managing director and chairman of E. R. Calthrop's Aerial Patents, Ltd. From this date up to the time of his death he devoted the whole of his life in studying this problem, and developed the now world-famous and successful "Guardian Angel" parachute. For his wonderful achievements with the "Guardian Angel" parachutes, used so extensively on the Italian Front during the Great War, he was recognised by the King of Italy, who conferred upon him the Italian Order of St. Maurice and St. Lazarus.

Everard Richard Calthrop was a brilliant thinker and a clever writer, using these talents to the full extent—so much so that he probably offended when a less brilliant thinker would have been less verbose and, consequently, more successful from a business point of view. He will, however, be remembered as a devoted champion to the cause so near his heart, of always striving to arrive at a day when the law should demand that every person flying should be equipped with a parachute—but he only lived to see the semblance of his wishes gratified.

Mr. Calthrop will also be remembered for his great love of animals—for one of his recreations was the breeding of Arab horses, of which at one time he had a magnificent stock.

Imperial Airways Items

COMMENCING on June 1 next Imperial Airways, Ltd., propose inaugurating a new air service between London and Paris, which will enable passengers to "do" Paris by night. A machine will leave Croydon at 4.30 p.m., arriving in Paris

at 7 p.m. The return flight starts at 9 a.m. the following morning, passengers arriving back in London before noon.

It is hoped that a service between London and Nice will be started this summer, when the enlargement of the aerodrome at Nice is completed. Machines would leave Croydon at 7.15 a.m. and reach Nice at 6 p.m., stops being made at Paris, Lyons and Marseilles en route.

Experiments have recently been made at Croydon in short-wave wireless telephony between aircraft in flight and ground stations with very successful results. A wave-length as low as 7 metres has been used. The object of the experiments has been to find a wave-length which will not be affected by morse.

Imperial Airways have issued their summer time-table, and it shows that air passages can be booked right through to no fewer than 66 foreign air ports. Moscow will be within 33 hours of the capital by a day-and-night service. Certain reductions have now been made in some of the fares.

PUBLICATIONS RECEIVED

Aeronautical Research Committee Reports and Memoranda: No. 1046 (Ae. 232).—The Effects of Body Interference on Aircraft Performance. By W. G. Jennings, B.Sc. July, 1926. H.M. Stationery Office, Kingsway, London, W.C.2. Price 6d. net.

The Air Pilot Monthly Supplement. No. 28. February, 1927. The Air Ministry, Kingsway, London, W.C.2.

International Press Exhibition, Cologne. May-October, 1928. Internationale Presse-Ausstellung, Köln, 1928, Köln-Deutz, Germany.

The Air Pilot Monthly Supplement. No. 29. March, 1927. The Air Ministry, Kingsway, London, W.C.2.

Technological Papers of the Bureau of Standards: No. 330. Resistance of Conductors of Various Types and Sizes as Windings of Single-Layer Coils at 150 to 6,000 Kilocycles. By E. L. Hall. October 27, 1926. Department of Commerce, Bureau of Standards. Government Printing Office, Washington, D.C., U.S.A. Price 5 cents.

Annual Report of the Board of Regents of the Smithsonian Institution for the Year ending June 30, 1925. Smithsonian Institution, Washington, D.C., U.S.A. Price \$1.50.

Flying for All. C. C. Wakefield and Co., Ltd. Wakefield House, Cheapside, London, E.C.2.

Aerial Report of the Volga Hydroplane Air Service. By Prof. N. Rynin. Kolomenskaja 37, Leningrad, Russia.

AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

APPLIED FOR IN 1925

Published April 7, 1927

- 28,455. F. W. LANCHESTER and LANCHESTER'S LABORATORIES, LTD. Cylinder cooling of i.c. engines. (267,190.)
29,870. H. LEITNER. Variable-pitch airscrews. (267,179.)

APPLIED FOR IN 1926

Published April 7, 1927

- 4,699. A. P. FILIPPI. Helicopters. (248,364.)
7,145. S. A. REED. Aeronautical propellers. (267,313.)
11,531. H. E. HODGSON. Flying machines. (267,350.)
17,788. K. REISER and C. GUTTINGER. Spring suspensions. (267,383.)
17,960. GOODYEAR-ZEPPELIN CORPORATION. Airship. (255,488.)
20,207. E. SCHMID. Anti-aircraft projectile. (258,566.)
20,867. DAP-MOTO-PATENT-GES. Rotating cylinder engines. (267,401.)

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